SANYO

FILE NO.

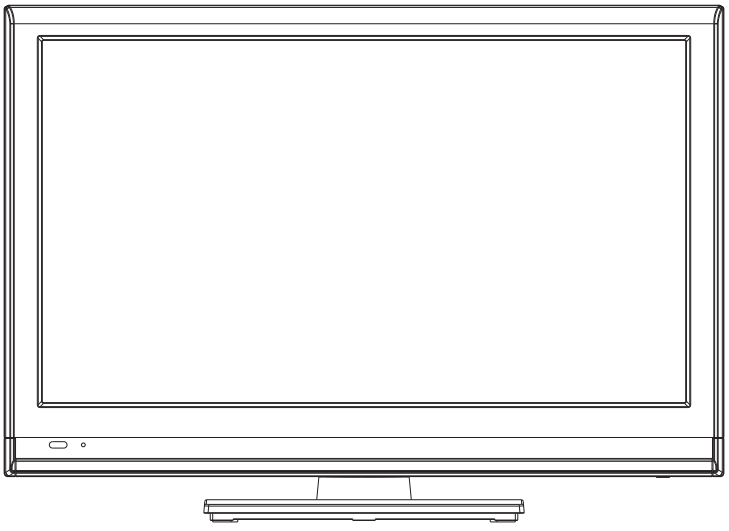
SERVICE MANUAL

LED-24XR113D

PRODUCT CODE No.
1 682 351 56: PAL-B/G (Australia)
NTSC(AV)

LED-LCD TV

with 3D Function



REFERENCE No.:SM0915208

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Attention: This service manual is only for service personnel to take reference with. Before servicing please read the following points carefully.

Safety precautions

1. Instructions

Be sure to switch off the power supply before replacing or welding any components or inserting/plugging in connection wire. Anti static measures must be taken (throughout the entire production process!):

a) Do not touch here and there by hand at will;

b) Be sure to use anti static electric iron;

c) It's necessary for the welder to wear anti static gloves.

Please refer to the part list before replacing components that have special safety requirements. Do not replace with different components with different specs and type at will.

2. LCD servicing precautions

2.1 Screens are different from one model to another and therefore not interchangeable. Be sure to use the screen of the original model for replacement.

2.2 The operation voltage of LCD screen is 700-825V. Be sure to take proper measures in protecting yourself and the machine when testing the system in the course of normal operation or right after the power is switched off. Please do not touch the circuit or the metal part of the module that is in operation mode. Relevant operation is possible only one minute after the power is switched off.

2.3 Do not use any adapter that is not identical with the TV set. Otherwise it will cause fire or damage to the set.

2.4 Never operate the set or do any installation work in bad environment such as wet bathroom, laundry, kitchen, or nearby fire source, heating equipment and devices or exposure to sunlight etc. Otherwise bad effect will result.

2.5 If any foreign substance such as water, liquid, metal slices or other matters happens to fall into the module, be sure to cut the power off immediately and do not move anything on the module lest it should cause fire or electric shock due to contact with the high voltage or short circuit.

2.6 Should there be smoke, abnormal smell or sound from the module, please shut the power off at once. Likewise, if the screen is not working after the power is on or in the course of operation, the power must be cut off immediately and no more operation is allowed under the same condition.

2.7 Do not pull out or plug in the connection wire when the module is in operation or just after the power is off because in this case relatively high voltage still remains in the capacitor of the driving circuit. Please wait at least one minute before the pulling out or plugging in the connection wire.

2.8 When operating or installing LCD please don't subject the LCD components to bending, twisting or extrusion, collision lest mishap should result.

2.9 As most of the circuitry in LCD TV set is composed of CMOS integrated circuits, it's necessary to pay attention to anti statics. Before servicing LCD TV make sure to take anti static measure and ensure full grounding for all the parts that have to be grounded.

2.10 There are lots of connection wires between parts behind the LCD screen. When servicing or moving the set please take care not to touch or scratch them. Once they are damaged the screen

would be unable to work and no way to get it repaired.
If the connection wires, connections or components fixed by the thermotropic glue need to disengage when service, please soak the thermotropic glue into the alcohol and then pull them out in case of dagmage.
2.11 Special care must be taken in transporting or handling it. Exquisite shock vibration may lead to breakage of screen glass or damage to driving circuit. Therefore it must be packed in a strong case before the transportation or handling.
2.12 For the storage make sure to put it in a place where the environment can be controlled so as to prevent the temperature and humidity from exceeding the limits as specified in the manual. For prolonged storage, it is necessary to house it in an anti-moisture bag and put them altogether in one place. The ambient conditions are tabulated as follows:

Temperature	Operation range	0 ~ +50 ^{o}C
	Storage range	-20 ~ +60 ^{o}C
Humidity	Operation range	20% ~ 85%
	Storage range	10% ~ 90%

2.13 Display of a fixed picture for a long time may cause a permanent after-image on the screen, as commonly called “ghost shadow”. The degree of the after-image varies with the maker of LCD screen. This phenomenon doesn’t represent failure. This “ghost shadow” may remain in the picture for a period of time (several minutes). But when operating it please avoid displaying still picture in high brightness for a long time.

3. Installation precautions

3.1 The front panel of LCD screen is made of glass. When installing it please make sure to put it in place.
3.2 For service or installation it’s necessary to use specified screw lest it should damage the screen.
3.3 Be sure to take anti dust measures. Any foreign substance that happens to fall down between the screen and the glass will affect the receiving and viewing effect
3.4 When dismantling or mounting the protective partition plate that is used for anti vibration and insulation please take care to keep it in intactness so as to avoid hidden trouble.
3.5 Be sure to protect the cabinet from damage or scratch during service, dismantling or mounting.

Adjustment Instructions

1 Safety Instructions

1.1 Power supply must be cut off when replacing or welding any component or inserting / pulling out connective lines;

1.2 Anti-electrostatic measures must be carried out during the whole producing processes!

a) Do not touch IC by hands at will;

b) Use anti-electrostatic iron;

c) Welder must wear anti-electrostatic glove;

1.3 Replacing any component with special safety requirement must refer to component list without changing its specification and model at will.

2 Adjustment Equipments

Multimeter or osciillograph

VG-849

CA-210

USB

DVD (included HDMI 1.4) or equipments with the same functions

3 Adjustment Processes

3.1 Power voltage test

According to the wiring diagram specified by “Product Specification”, connect power board assembly, data processing assembly, IR/Key board assembly, backlight board assembly correctly, supply with power, press button ⏻ to power on the TV set.

Test voltage of socket X601 each pin on the main board. Voltage value and range are listed as Table 1(a) for LCD size ≥26”; voltage value and range are listed as Table 1(b) for non-3D LCD & LED size ≤24”; voltage value and range are listed as Table 1(c) for LED size ≥26”; voltage value and range are listed as Table 1(d) for 3D LED size ≤24”;

Table 1(a) Voltage of X601 each pin （LCD size ≥26”）

X601	Pin1,2	3,4	5,6	7,8	9	10	11	12	13
Vol.	24 V±5%	0	12 V±5%	0	≤5.2 V	5 V±5%	5 V±5%	≤5.2 V	≤5.2 V
Function	AMP_PWR	GND	+12 V	GND	PWR_SW	Main 5 V	+5 V STB	BL_PWM	BL_ON

Table 1(b) Voltage of X601 each pin （non-3D LCD & LED size ≤24”）

X601	Pin1,2	3,4	5	6	7,8	9	10	11	12	13
Vol.	12 V±5%	0	12 V±5%	NC	0	≤5.2 V	5 V±5%	5 V±5%	≤5 V	≤3.6 V
Function	AMP_PWR	GND	+12 V	NC	GND	PWR_SW	Main 5 V	+5 V STB	BL_PWM	BL_ON

Table 1(c) Voltage of X601 each pin （LED size ≥26”）

X601	Pin1	2	3	4	5	6,7	8,9	10,11	12，13
Vol.	≤5.2 V	≤5.2 V	5V±5%	5V±5%	≤5.2 V	0	12 V±5%	0	24 V±5%

Function	BL_ON	BL_PWM	+5 V STB	Main 5 V	PWR_SW	GND	+12 V	GND	AMP_PWR

Table 1(d) Voltage of X601 each pin （3D LED size ≤24”）

X601	Pin1,2	3,4	5	6	7,8	9	10	11	12	13
Vol.	12 V±5%	0	12 V±5%	≤3.6 V	0	≤5.2 V	5 V±5%	5 V±5%	≤5 V	≤3.6 V
Function	AMP_PWR	GND	+12 V	3D-EN	GND	PWR_SW	Main 5 V	+5 V STB	BL_PWM	BL_ON

3.2 Adjustment flow as Fig. 1:

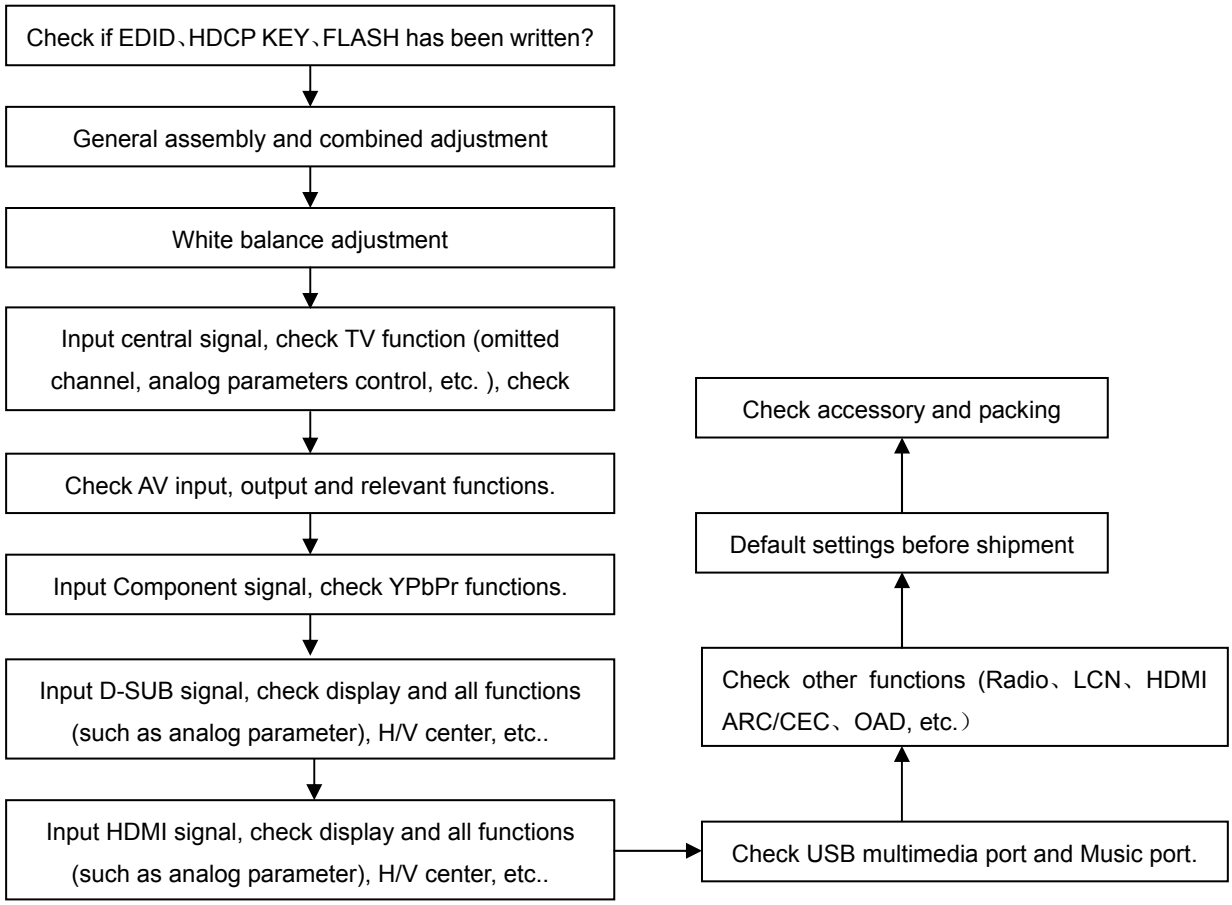

Check if EDID、HDCP KEY、FLASH has been written?
General assembly and combined adjustment
White balance adjustment
Input central signal, check TV function (omitted channel, analog parameters control, etc.), check
Check AV input, output and relevant functions.
Input Component signal, check YPbPr functions.
Input D-SUB signal, check display and all functions (such as analog parameter), H/V center, etc..
Input HDMI signal, check display and all functions (such as analog parameter), H/V center, etc..
Check USB multimedia port and Music port.
Check other functions (Radio、LCN、HDMI ARC/CEC、OAD, etc.）
Default settings before shipment
Check accessory and packing

Fig. 1 Adjustment flow chart

4 Adjustment Instructions

4.1 The unit adjustments

4. 1. 1 According to the wiring diagram specified by “Product Specification”, connect power/backlight board assembly, data processing assembly, IR/Key board assembly correctly, supply with power, turn on the TV set. Check display

4. 1. 2 Factory menu instruction

a) Press key “**INPUT**”, then press digital keys “**2、5、8、0**” in turn to enter into primary factory menu;
b) Press keys “▲” and “▼” to move cursor to each page of primary factory menu, then press key “**OK**” to enter into submenu page;
c) Press keys “▲” and “▼” to move cursor upward or downward within any one page;
d) Press keys “◄” and “►” to do adjustment when move cursor to one item;
e) Press key “**MENU**” to exit submenu page to the superior factory menu;
f) Press key “**EXIT**” to exit factory menu in any case；
g) Press key “**OK**” to enter the inferior factory submenu;
h) Factory menu item: **ADC ADJUST** to be used for ADC calibration for VGA and Component;
i) Factory menu item: **Color Temp.** to be used for white balance adjustment;
j) Factory menu item: **Fac. Channel Preset** to be used for factory channel presetting; central signal digital frequency value for Australia program is set as CH28(529.5 MHz) and CH33(564.5 MHz); original digital program presetting could not change as central signal setting has any modification, so please search for digital program manually by performing item DTV of menu Channel;
k) Factory menu item: **EEPROM Init** to be used for initializing factory data and user date; the TV set will restart when carrying out the item;
l) Factory menu item: **Aging Mode** to be used for aging the TV set; red, green, blue and white full screen picture displays in turn; default setting is OFF;
m) Factory menu item: **Other Settings** including settings of MST DEBUG, ISP MODE, Backlight, SSC, NONLINEAR, Video Quality, Audio Quality, Light Sensor, Overscan, QMAP ADJUST, VIF1, Aus/Nz All Ch Preset, etc.; no need any adjustment normally.
n) Factory menu item: **Power mode** to be used for power-on mode setting;
   Standby: to be in standby state when power on the TV set;
   Mem: to keep in last power-off state when power on the TV set again;
   Force On: the TV set will start up automatically when power on the TV set again;
   The default setting will be set as Standby mode and keep in memory unless customer has special requirement;
o) Factory menu item: **USB SW Update** to be used for software updating from USB port; after U disk containing updating software is inserted into USB port, choose the item to perform updating process;
p) Factory menu item: **Shipment** to be used for initializing user data; the TV set will be initialized and then a prompt “SUCCESS” will display, initial guided interface will display after pressing key “exit”;
q) Please perform **EEPROM Init** before adjustment for the first time if software has been upgraded or data have been kept in EEPROM.

4. 1. 3 ADC calibration for D-SUB channel

a) Switch to D-SUB channel;
b) Press key "**INPUT**", then press digital keys "**2、5、8、0**" in turn to enter into primary factory menu;
c) Move cursor to item "**ADC ADJUST**" and press key "**OK**" to enter into the inferior submenu;
d) Input D-SUB signal (**VG-849 Timing:856 (1024×768/60 Hz), Pattern:914 chess square (5 white squares + picture with frame)**); move cursor to item "**MODE**", press keys "▲" and "▼" to choose item "**RGB**", then move cursor to item "**AUTO ADC**" and press key "**OK**" to perform auto adjustment until a prompt "**success**" displays;

4. 1. 4 ADC calibration for Component channel

a) Switch to Component channel;
b) Press key "**INPUT**", then press digital keys "**2、5、8、0**" in turn to enter into primary factory menu;
c) Move cursor to item "**ADC ADJUST**" and press key "**OK**" to enter into the inferior submenu;
d) Input Component signal (**VG-849 Timing:972(1080i), Pattern:918 100% color bar**); move cursor to item "**MODE**", press keys "▲" and "▼" to choose item "**YPbPr**", then move cursor to item "**AUTO ADC**" and press key "**OK**" to perform auto adjustment until a prompt "**success**" displays;

4.2 White balance adjustment

For TV model （＜24"), default settings of **COOL color temperature is 10000K and chromatic coordinates is** (**280、288**); referenced settings of **Normal** color temperature is **8000K** and chromatic coordinates is (**295、305**); referenced settings of **Warm** color temperature is **6500K** and chromatic coordinates is (**313、329**);

For TV model （≥24"), default settings of **COOL color temperature is 12000K and chromatic coordinates is** (**272、278**); referenced settings of **Normal** color temperature is **9300K** and chromatic coordinates is (**285、293**); referenced settings of **Warm** color temperature is **6500K** and chromatic coordinates is (**313、329**);

Default setting is **Normal**.

4.3 Adjustment procedures

The TV set should be working above 30 minutes to be in a stabler state before adjustment. Use CA-210 BBY channel to adjust white balance;

a) Switch to HDMI channel;
b) Press key "**INPUT**", then press digital keys "**2、5、8、0**" in turn to enter into primary factory menu;
c) Move cursor to item "**W/B ADJUST**" and press key "**OK**" to enter into the inferior submenu;
d) Input HDMI signal (**VG-849 Timing: 972(1080i)，Pattern:921 16 step Gray**); move cursor to item "**MODE**", press keys "▲" and "▼" to choose item "**HDMI**", then move cursor to item "**TEMPERTURE**" and press keys "▲" and "▼" to choose "**NORMAL**";
e) Fix "**G GAIN**", adjust "**R GAIN, B GAIN**" to set 14th chromatic coordinates as (285、293);
f) Fix "**G OFFSET**", adjust "**R OFFSET、B OFFSET**" to set 4th chromatic coordinates as (285、293);
g) To make sure chromatic coordinates of bright scale are (**X=285±10，Y=293±10**) and chromatic coordinates of dark scale are (**X=285±10，Y=293±10**) during adjustemnt;
h) Move cursor to item "**COPY ALL**" to copy white balance data to other channels except **DTV** channel;

i) Check if chromatic coordinates of **COOL** and **WARM** meet the requirements (permitted error of **COOL** bright scale: **x±10，y±10**, permitted error of **COOL** dark scale: **x±10，y±10**; permitted error of **WARM** bright scale and dark scale: **x±10，y±10**); if not, adjust "**R_GAIN /B_GAIN/R_OFF/B_OFF**" to be up to the requirements and then save the data;

j) Perform "**Copy All**" for **COOL /Warm** adjustments except **DTV** channel;

k) Check if chromatic coordinates of other channels meet the requirements, if not, do adjustment for nonstandard channel alone in accordance with the same procedures from b) to j) as HDMI channel's and then save the data;

l) Switch to DTV channel, change to 16 step Gray program from central signal source, adjust white balance in accordance with the same procedures from e) to g); but **pay attention not to perform "COPY ALL"!**

m) Inspect all channels after completing adjustment to check if display is normal;

n) Refer to the following rule for adjustment:

B Gain/Offset: adjust B Gain/Offset downward, coordinates of X and Y will increase, adjust B Gain/Offset upward, coordinates of X and Y will decrease;

R Gain/Offset: adjust R Gain/Offset will affect X value, but affect Lv value slightly, adjust R Gain/Offset upward, coordinates of X will increase, adjust R Gain/Offset downward, coordinates of X will decrease;

G Gain/Offset: adjust G Gain/Offset will affect Y value, and affect Lv value greatly, adjust G Gain/Offset upward, coordinates of Y will increase, adjust G Gain/Offset downward, coordinates of Y will decrease;

Note: Sanyo customer requires that default color temperature is **Normal**, adjust white balance of color temperature **Normal** and **Cool** in Dynamic picture mode; for other customers, please adjust white balance of color temperature **Cool** in Dynamic picture mode.

5 **Function check**

5.1 TV functions

Input central signal to RF port, enter into menu **Channel** first, then search for programs automatically and check if there is any omitted program; check the speakers output and the picture display.

5.2 AV port

Input AV signal with formats listed as Table 2 separately, check picture, sound and other functions;

Table 2 AV video signal formats

No.	Lines per frame	H.- Freq.（kHz）	V.- Freq.（Hz）	Note
1	525	15.734/15.75	59.94/60	NTSC, NTSC4.43,PAL60,PAL-M
2	625	15.625	50	PAL, PAL-N, SECAM

5.3 Component port

Input Component signal from VG-849 with formats listed as Table 3 separately, check picture and sound in the case of power-on, switching channel, changing mode, etc.;

Table 3 Component signal formats

No.	Definition	H.- Freq. (kHz)	V.- Freq. (Hz)	Dot pulse Freq. (MHz)	Note
1	720×480	15.734/15.75	59.94/60	13.5/13.514	480i (NTSC)
2	720×576	15.625	50	13.5	576i (PAL)
3	720×480	31.469/31.5	59.94/60	27/27.027	480p (NTSC PROG)
4	720×576	31.25	50	27	576p (PAL PROG)
5	1280×720	37.5	50	74.25	720p (50p)
6	1280×720	44.955/45	59.94/60	74.176/74.25	720p (59.94p/60p)
7	1920×1080	28.125	50	74.25	1080i (50i)
8	1920×1080	33.75	59.94/60	74.176/74.25	1080i (59.94p/60p)
9	1920×1080	26.973	23.976	74.176	1080p (23.97p)
10	1920×1080	27	24	74.25	1080p (24p)
11	1920×1080	28.125	25	74.25	1080p (25p)
12	1920×1080	33.716	29.97	74.176	1080p (29.97p)
13	1920×1080	33.75	30	74.25	1080p (30p)
14	1920×1080	56.25	50	148.5	1080p (50p)
15	1920×1080	67.432/67.5	59.94/60	148.35/148.5	1080p (59.94p/60p)

5.4 D-SUB port

Input D-SUB signal from VG-849 with formats listed as Table 4 separately, check picture and sound; if H./V. of picture displays abnormally, enter into main menu items Picture->Screen->Auto Adjust to perform auto calibration.

Table 4 D-SUB signal formats

No.	Definition	H.- Freq. (kHz)	V.- Freq. (Hz)	Dot pulse Freq. (MHz)	Note
1	640×480	31.469	59.94	25.175	IBM
2	720×400	31.469	70.086	28.322	IBM
3	640×480	37.861	72.809	31.5	VESA
4	640×480	37.5	75	31.5	VESA
5	800×600	35.156	56.25	36	VESA
6	800×600	37.879	60.317	40	VESA
7	800×600	48.077	72.188	50	VESA
8	800×600	46.875	75	49.5	VESA
9	1024×768	48.363	60.004	65	VESA
10	1024×768	56.476	70.069	75	VESA
11	1024×768	60.023	75.029	78.75	VESA
12	1152×864	67.5	75	108	VESA
13	1280×960	60	60	108	VESA
14	1280×1024	63.98	60.02	108	VESA
15	1280×1024	80	75	135	SXGA
16	1360×768	47.7	60	85.5	WXGA
17	1440×900	55.9	60	106.5	WXGA+ (Panel National only)
18	1680×1050	65.3	60	146.25	WSXGA+ (Panel National only)
19	1920×1080	67.5	60	148.5	Full HD

5.5 HDMI port

HDMI port supports all signal formats supported by Component port (Table 3) and D-SUB port (Table 4), furthermore, it can also support signal with formats listed as Table 5 and Table 5 (video and audio composition). Check picture and sound in the case of power-on, switching channel, changing mode, etc.;

Table 5 Digital HDMI signal formats

No.	Definition	H.- Freq. (kHz)	V.- Freq. (Hz)	Dot pulse Freq. (MHz)	Note
1	720(1440)×480	15.734/15.75	59.94/60	27/27.027	720(1440)×480i@59.94/60 Hz,4:3/16:9
2	720(1440)×576	15.625	50	27	720(1440)×576i@50 Hz,4:3/16:9

Table 6 Video & audio signal formats of digital HDMI

No.	Item	Unit	Parameters	Note
1	Video		Deep color：RGB 4:4:4（24 bit/pixel，30 bit/pixel，36 bit/pixel）、 YUV 4:4:4 （24 bit/pixel，30 bit/pixel，36 bit/pixel）、 For 1080p，deep color only supports30 bit/pixel。 YUV 4:2:2(16 bit)、YUV 4:2:2(20 bit)、YUV 4:2:2(24 bit)	
2	Audio sample freqence	kHz	32、44.1、48	
3	Audio data width	Bit	16、20、24	

5.6 USB port

USB ports of some TV models without multimedia processing function are only used for upgrading software, so functions as follow is only suitable for TV model with multimedia processing function, and **for TV model without multimedia processing function, pay attention not to connect movable HD to USB port directly**!

5. 6. 1 PVR function

Insert a formatted U disk in which recorded programs have been saved; press key “Record List” to choose and play programs, check picture, sound and other functions;

5. 6. 2 Time Shifting function

Insert a formatted U disk with some empty saving space; press key “T.SHIFT” to record programs, then play the recorded programs and check picture, sound and other functions;

5. 6. 3 3D signal

Input HDMI signal from VG-871 with formats listed as Table 7 separately, check picture and sound (32 KHz、44.1 KHz、48 KHz) in the case of power-on, switching channel, changing mode, etc.;

Table 7 3D signal formats

· 1280×720p @ 59.94/60 Hz (Frame Packing, Side-by-Side(Half), Top-and-Bottom)
· 1280×720p @ 50 Hz (Frame Packing, Side-by-Side(Half), Top-and-Bottom)
· 1280×720p @ 23.98/24 Hz (Frame Packing)
· 1280×720p @ 29.97/30 Hz (Frame Packing)
· 1920×1080i @ 59.94/60 Hz (Frame Packing, Side-by-Side(Half))
· 1920×1080i @ 50 Hz (Frame Packing, Side-by-Side(Half))
· 1920×1080p @ 23.98/24 Hz (Frame Packing, Side-by-Side(Half), Top-and-Bottom)
· 1920×1080p @ 29.97/30 Hz (Frame Packing, Top-and-Bottom)
· 1920×1080p @ 59.94/60Hz (Top-and-Bottom)
· 1920×1080p @ 50 Hz (Top-and-Bottom)

5. 6. 4 Media playing function

Insert a U disk kept files of picture, sound and video, check picture, sound and other functions;

Supported media formats as below:

Photo：JPEG，BMP，PNG，progressive JPEG

Video：H.264 ，MPEG-1，MPEG-2，MPEG2_HD， MPEG4，MPEG4_SD， MPEG4_HD，MotionJpeg，Divx，Xvid，VC-1，FLV

Audio ： WMA ， MP3 ， M4A(AAC) ， HE-AAC/HE-AAC V2 ， Dolby Digital (AC-3) ，MPEG1 Layer II/Musicam，LPCM，ADPCM，CDDA(*.wav)

5.7 Music port (depending on TV set which contains music port or not)

Input audio signal to side music port (analog audio input) from audio output equipment, check audio output.

5.8 Other functions check

a) Check timing on/off, sleeping time off, picture/sound mode, OSD, stereo, digital audio port, etc,;
b) Check pure digital audio programs (RADIO) ;
c) Check logical channel number (LCN);
d) Check HDMI ARC;
e) Check HDMI CEC;
f) Check OAD for special customer;。

6 **User Menu Setting** b**efore Ex-factory**

Enter into LOCK page of user menu and choose submenu item “Restore Factory Default” to perform presetting before shipment;

a) Clear out all programs;
b) Clear out information of VCHIP，parent control, etc.;
c) Default user analog parameters setting;
d) Recover default password;
e) Set Menu Language as English;

7 **Software Upgrading Instructions as Table 8**

7.1.1 Upgrading chips are listed as Table 8:

Table 8 Software Upgrading Instructions

Location	Part No.	Part model	Software functions	SMT before upgrading	Upgrading methods
N103/N102	5272532006/ 5272532007	EN25Q32A-100HIP/ EN25Q32B-104HIP	FLASH	Yes	Upgrade with ALL100, etc., need write protection, refer to Note1;
N105	5272404005	CAT24C04WI-GT3	HDCP KEY	Yes	Upgrade with ALL100, etc.
NB03/N314	5272402003	CAT24C02WI	VGA EDID	Yes	
N801	5272540003	EN25F40-100GCP	MEMC module_6M30	Yes	
N701	5270615001	PIC12F615I/SN	3D IE module	Yes	

Note 1 Write protection setting methods: enter into ALL-100 upgrading interface “AUTO”, tick off “Config”, press “config Setting”, set option “Protect” as “All Protect” and “SRWD” as “Enable”, then press “OK” to complete write protection setting;

Please make sure option “Config” is ticked off during software upgrading and reset write protection after ALL-100 upgrading software is opened each time;

Note 2 Upgrading method with ISP upgrading instrument:

1） Main board upgrading: connect 4-core line of ISP to Debug port (X107) on main board;

The Unit upgrading: connect both VGA ports of ISP and main board, enter into factory menu and set “ISP Mode” as “ON”;

2） Use Mstar upgrading instrument (V4.4.2.0 or higher version), enter into menu “Device”, tick off “WP Pin pull to high during ISP” to make sure Flash hardware write protection is removed and erasing process is normal; please refer to Fig.2;

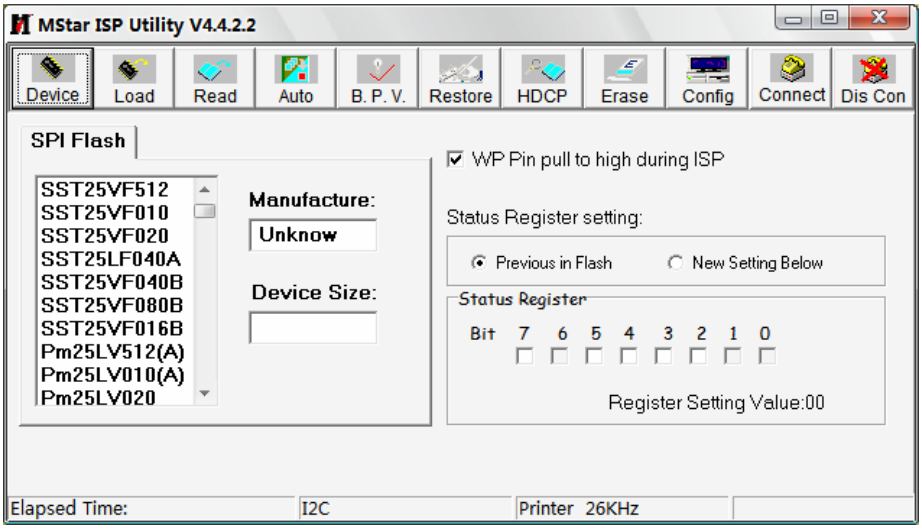


Fig. 2 Write protection setting

3） Press menu “Connect”, dialog box “Device Type is MX25L64” (device type depending on parts used on board actually) will display to show successful connection; please refer to Fig. 3;

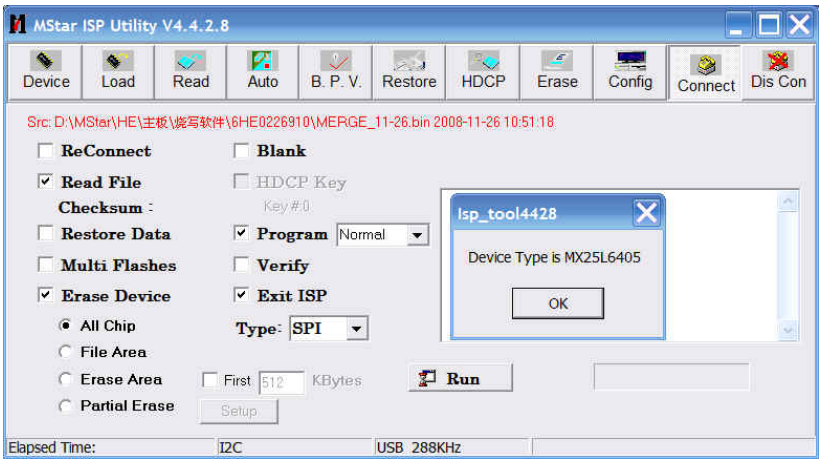


Fig. 3 Device MX25L64 successful connection

If connection is failed, press the first menu “Device” and choose “MX25L64” manually, then press “Connect”;。

4） Press “Read”, choose upgrading file, such as “MERGE.bin”; please refer to Fig. 4;

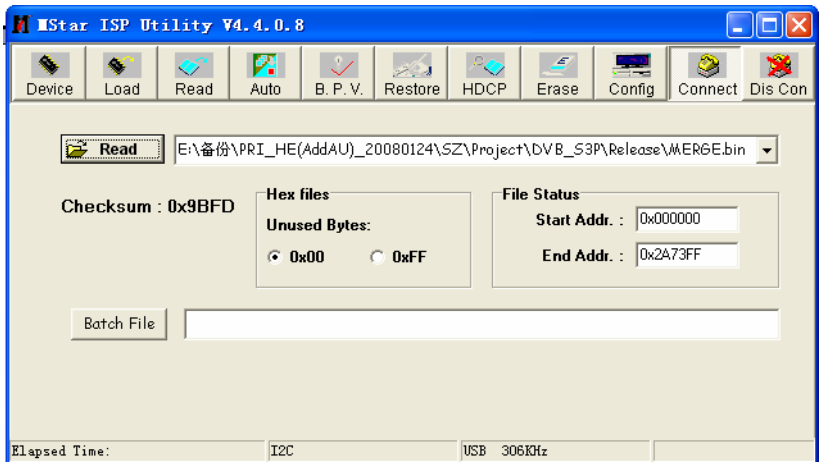


Fig. 4 Choosing upgrading file

5） Press “Auto”, tick off “All chip”, “program” and other necessary options; please refer to Fig. 5;

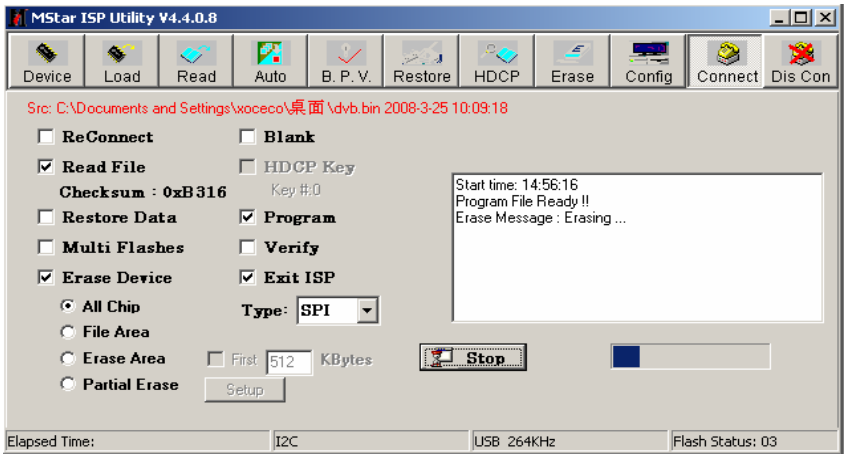


Fig. 5 Options

6） Press “Run” shown as Fig. 4 to perform upgrading in two steps, “Erase” and “Program”, please refer to Fig. 6; normal upgrading processes are described as follow:

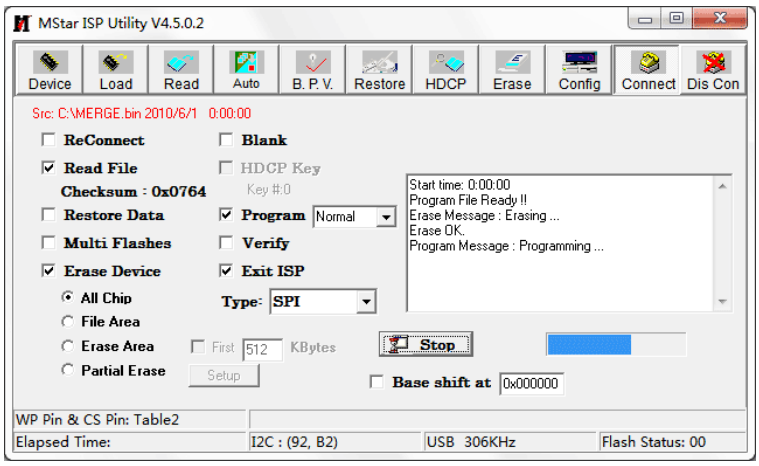


Fig. 6 Upgrading processes

The first step “Erasing…， Flash Status: 03” will last for some time, or the erasing step is failed if the step passes over immediately; please perform procedure 2) to upgrade software again;

The second step is “Programming…，Flash Status:00”;。

Then prompt “Pass” displays.

7） Prompt “Pass” will display by button “Run” when upgrading succeeds; please refer to Fig. 7;

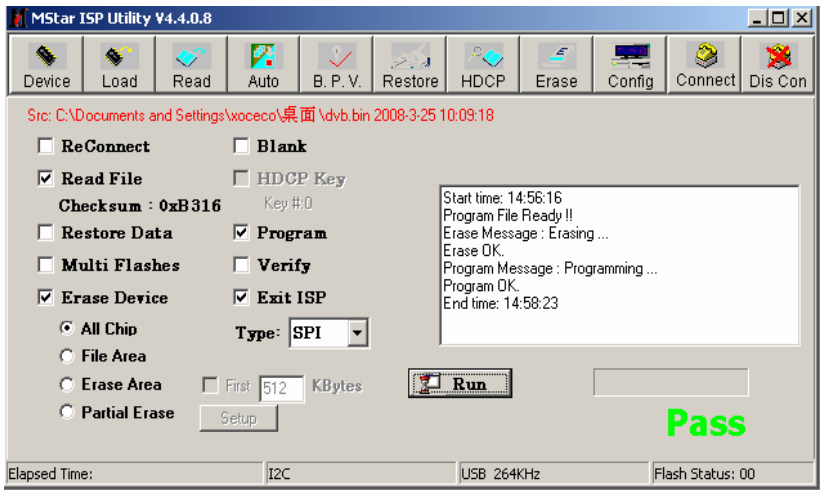


Fig. 7　A green prompt “Pass” displayed by “Run” when upgrading is successful.

8） Need not exit ISP upgrading interface if there are other TV sets to be upgraded , only procedures 3) and 6) need to be repeated;。

Note 3　Upgrading with USB:

1） Make sure U disk is formatted as FAT32;

2） Copy software file named as “Merge.bin” to U disk;

3） Turn on the TV set and make sure the current channel is ATV or DTV without OSD interface, then insert U disk to USB port of the unit;

a)　First press key “**INPUT**”, then press keys “**2、5、8、0**” in turn to enter into primary factory menu;

b)　Choose “USB SW Update” to begin upgrading;

4） Upgrading processes:

a) Read data from U disk while data indicator light of U disk is twinkling at the same time;

b) Upgrading flash, then the unit will be in “standby” mode;

5） Cut off the power supply and then restart the TV set, enter into factory menu to verify parameter s of version and time, then perform “EEPROM Init” to complete the whole upgrading processes.

Note: The USB upgrading methods can not be sure to be suitable for all types of U disks, so try another U disk if necessary.

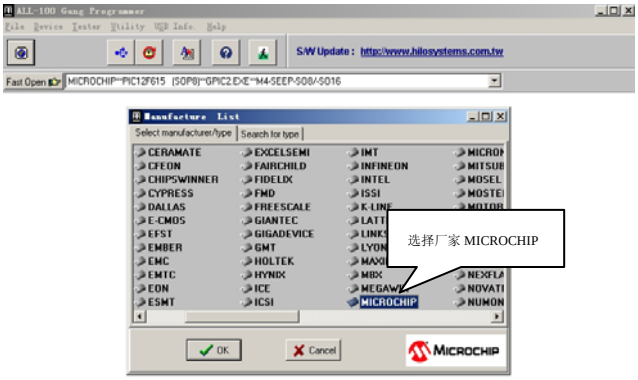
7.1.2 Upgrading methods of 3D IR chip

1） Connect ALL-100 and PC, turn on the power supplies of ALL-100 and PC. Double click icon

shown as Fig.8 when system is waiting for input;

Fig. 8　Software icon

2） Press key “DEVICE” shown as Fig. 9 to select company name “MICROCHIP”, then press key “OK”; select type “MPU/MCU” and corresponding adapter type “PICF12615”, then press key “Run”; then wait until interface as Fig. 10 displays;



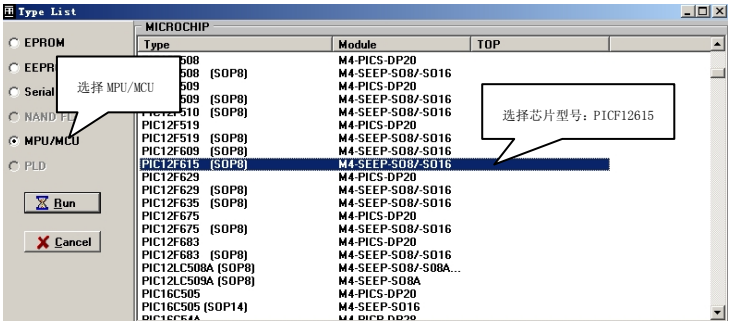


Fig. 9　Chip selection interface

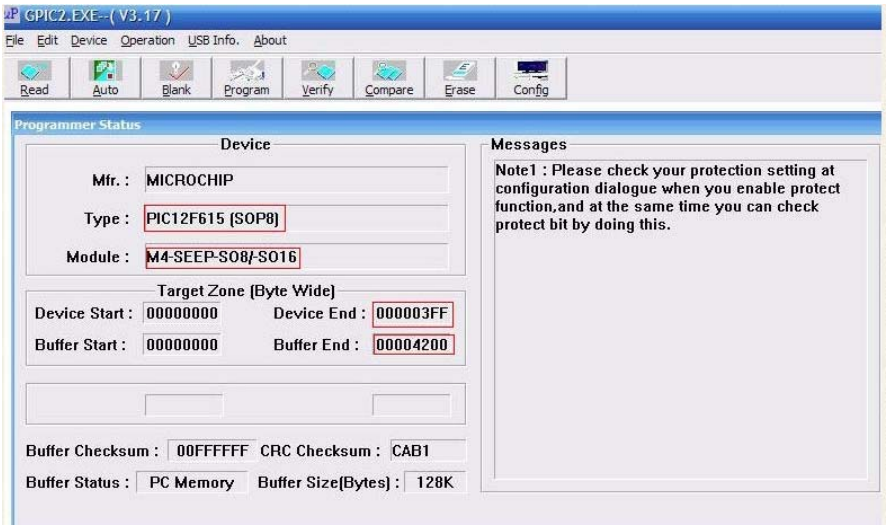

GPIC2.EXE--(V3.17)
File Edit Device Operation USB Info. About
Read Auto Blank Program Verify Compare Erase Config
Programmer Status
Device
Mfr. : MICROCHIP
Type : PIC12F615 (SOP8)
Module : M4-SEEP-SO8/-SO16
Target Zone (Byte Wide)
Device Start : 00000000
Device End : 000003FF
Buffer Start : 00000000
Buffer End : 00004200
Buffer Checksum : 00FFFFFF
CRC Checksum : CAB1
Buffer Status : PC Memory
Buffer Size(Bytes) : 128K
Messages
Note1 : Please check your protection setting at configuration dialogue when you enable protect function,and at the same time you can check protect bit by doing this.

Fig. 10　IC type selection

3）Click menu “File”, select item “Load File to programmer buffer” shown as Fig. 11. Select “Intel HEX”, “FF” and other options according to settings shown within red frame of Fig. 12, then press key “OK”;

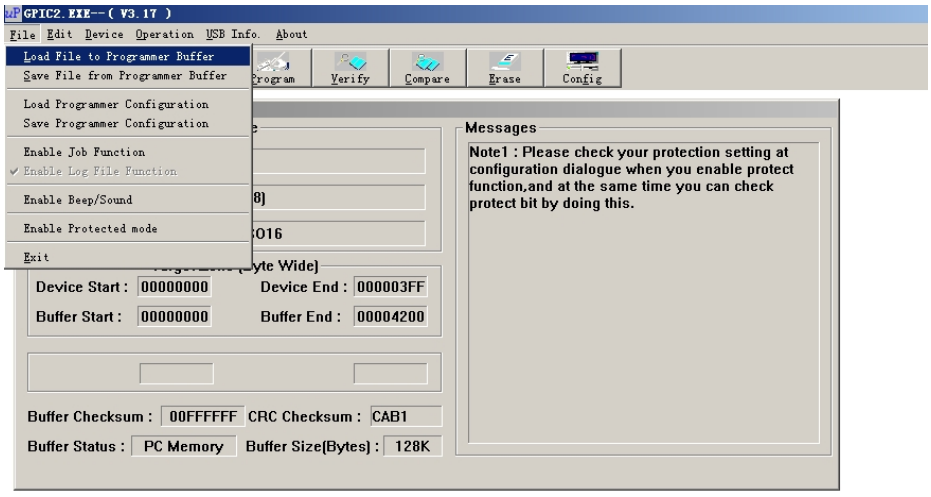

File Edit Device Operation USB Info. About
Load File to Programmer Buffer
Save File from Programmer Buffer
Load Programmer Configuration
Save Programmer Configuration
Enable Job Function
Enable Log File Function
Enable Beep/Sound
Enable Protected mode
Exit
Program Verify Compare Erase Config
Messages
Note1 : Please check your protection setting at configuration dialogue when you enable protect function,and at the same time you can check protect bit by doing this.
Device Start : 00000000
Device End : 000003FF
Buffer Start : 00000000
Buffer End : 00004200
Buffer Checksum : 00FFFFFF
CRC Checksum : CAB1
Buffer Status : PC Memory
Buffer Size(Bytes) : 128K

Fig. 11　Upgrading file selection

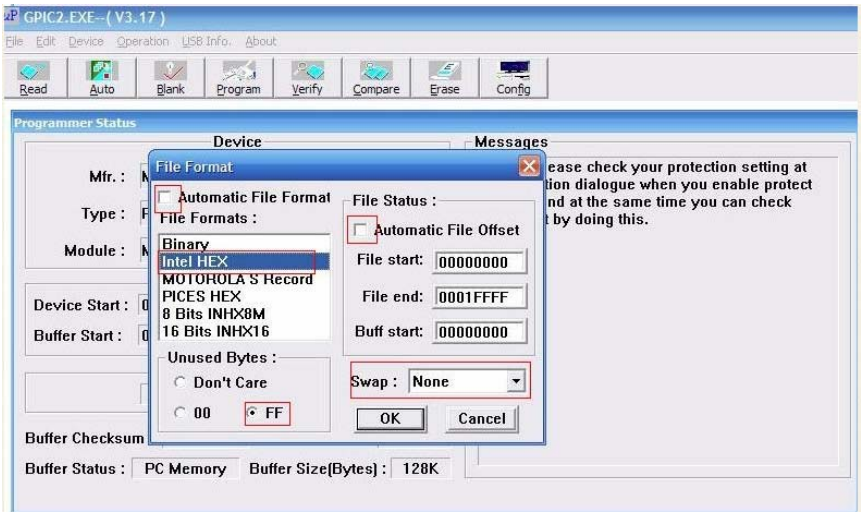


Fig. 12　Setup interface

4）Press “Auto” and “Configuration & ID data”, select options according to settings shown within red frame of Fig.13;

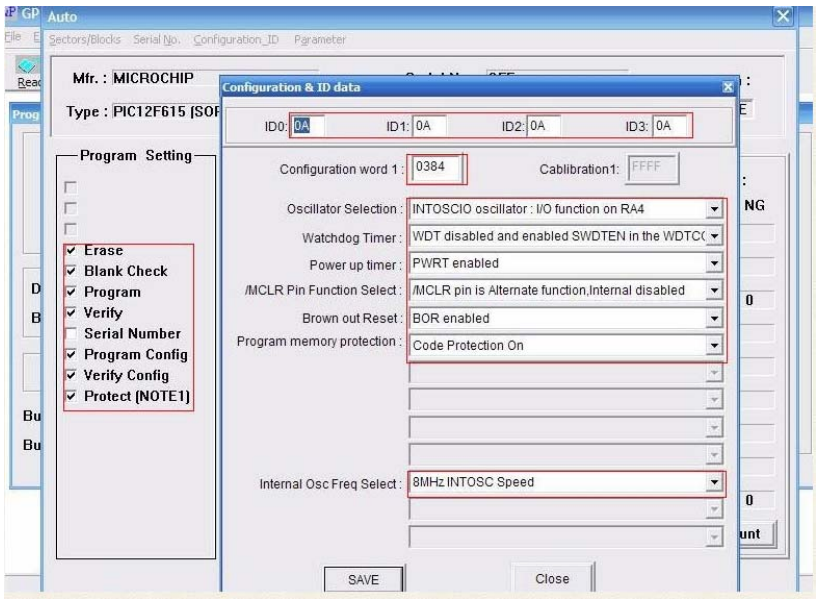


Fig. 13　Option setting interface

5）Press “Run” to begin upgrading after completing setup.

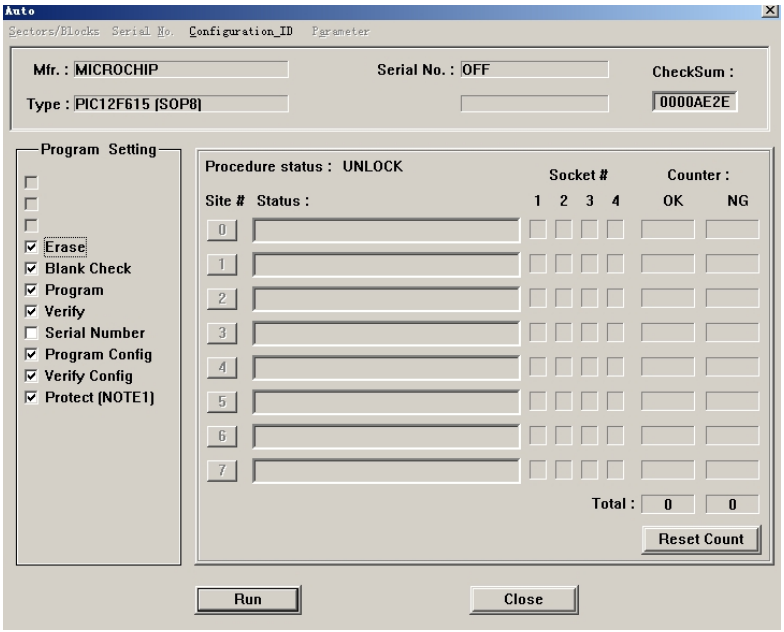


Fig. 14　Upgrading interface

Working Principle of the Unit

1、 ATV PAL signal flow

Receive RF PAL analog signal and sent it to **XC5200C** (D/A silicon Tuner controlled by main chip **MSD309PX** through I^2C bus) to be demodulated, then differential IF signal is send out to main chip **MSD309PX** analog demodulator to be demodulated to get analog CVBS video signal and SIF audio signal.

CVBS video signal is processed by back-end video decoder, anti-interlacing part, video processor and zoom controller, then sent to chip **6M30QSR** to be processed, in the end LVDS signal is outputted to drive display panel.

SIF sound signal is processed by back-end demodulator to get analog audio signal, then it is processed by pre-amplifier, acoustic effect processor and volume controller to get two parts of signals: the analog part of signal is sent to earphone amplifier **MAX9820** to be amplified and then outputted to earphone jack; the digital part of signal I2S is sent to digital audio power amplifier **TAS5711** to be processed by D/A converter and power amplifier, then outputted to drive speakers.

2、 DVB-T signal flow

Receive RF DVB-T digital signal and sent it to **XC5200C** (D/A silicon Tuner controlled by main chip **MSD309PX** through I^2C bus) to be processed by down-frequency converter, then differential IF signal is send out to main chip **MSD309PX** digital demodulator to be demodulated, then standard parallel transmission stream is outputted to back-end demultiplexer and decoder to be processed.

Video channel: demultiplexing digital video signal is processed by **MSD309PX** decoder and video processor, then sent to chip **6M30QSR** to be processed, in the end LVDS signal is outputted to drive display panel;

Audio channel: demultiplexing digital audio signal is processed by **MSD309PX** decoder and audio processor, then double-sound-track analog audio signal (stereo) is outputted to **MSD309PX** to be processed by preamplifier, acoustic effect processor and volume controller to get two parts of signals: the analog part of signal is sent to earphone amplifier **MAX9820** to be amplified and then outputted to earphone jack; the digital part of signal I2S is sent to digital audio power amplifier **TAS5711** to be processed by D/A converter and power amplifier, then outputted to drive speakers.

3、 AV input signal flow

AV video signal is inputted to main chip **MSD309PX** to be processed by video decoder, anti-interlacing part, video processor and zoom controller, then sent to chip **6M30QSR** to be processed, in the end LVDS signal is outputted to drive display panel;

AV audio signal is processed by voltage divider, resistance matcher and AC coupler, then sent to main chip **MSD309PX** to be processed by acoustic effect processor and volume controller to get two parts of signals: the analog part of signal is sent to earphone power amplifier **MAX9820** to be amplified and then outputted to earphone jack; the digital part of signal I2S is sent to digital audio power amplifier **TAS5711** to be processed by D/A converter and power amplifier, then outputted to drive speakers.

4、 D-SUB/YPbPr input signal flow

D-SUB、YPbPr video signal is inputted to main chip **MSD309PX** to be processed by A/D converter, video decoder, anti-interlacing part, video processor and zoom controller, then LVDS signal is outputted to

drive display panel;

D-SUB、YPbP audio signal is processed by voltage divider, resistance matcher and AC coupler, then sent to main chip **MSD309PX** to be processed by acoustic effect processor and volume controller to get two parts of signals: the analog part of signal is sent to earphone power amplifier **MAX9820** to be amplified and then outputted to earphone jack; the digital part of signal I2S is sent to digital audio power amplifier **TAS5711** to be processed by D/A converter and power amplifier, then outputted to drive speakers.

5、 HDMI input signal flow

HDMI video signal is inputted to main chip **MSD309PX** to be processed by video decoder, video processor and zoom controller, then sent to chip **6M30QSR** to be processed, in the end LVDS signal is outputted to drive display panel;

HDMI audio signal is sent to main chip **MSD309PX** to be processed by audio decoder, pre-amplifier, acoustic effect processor and volume controller to get two parts of signals: the analog part of signal is sent to earphone power amplifier **MAX9820** to be amplified and then outputted to earphone jack; the digital part of signal I2S is sent to digital audio power amplifier **TAS5711** to be processed by D/A converter and power amplifier, then outputted to drive speakers.

6、 SPDIF input signal flow

SPDIF audio signal is sent to main chip **MSD309PX** to be processed by acoustic effect processor, volume controller and digital audio coder, then is outputted.

7、 Brief instruction on unit functions

MPEG-2 MP@HL、H.264 Main and High profile up to Leve4.0 Decoding
MPEG、Dolby Digital（AC-3）、AAC Digital Audio Decoding
3D comb filter
Low consumed power in standby mode（≤1W）
Audio power amplifier (D type) with HI-FI acoustic output
High quality transformation from interleaved scanning to line-by-line scanning
Realizing real integrative functions
- build integration
- integrative TUNER（integrating analog with digital）
- integrative searching-program function
- integrative OSD interface

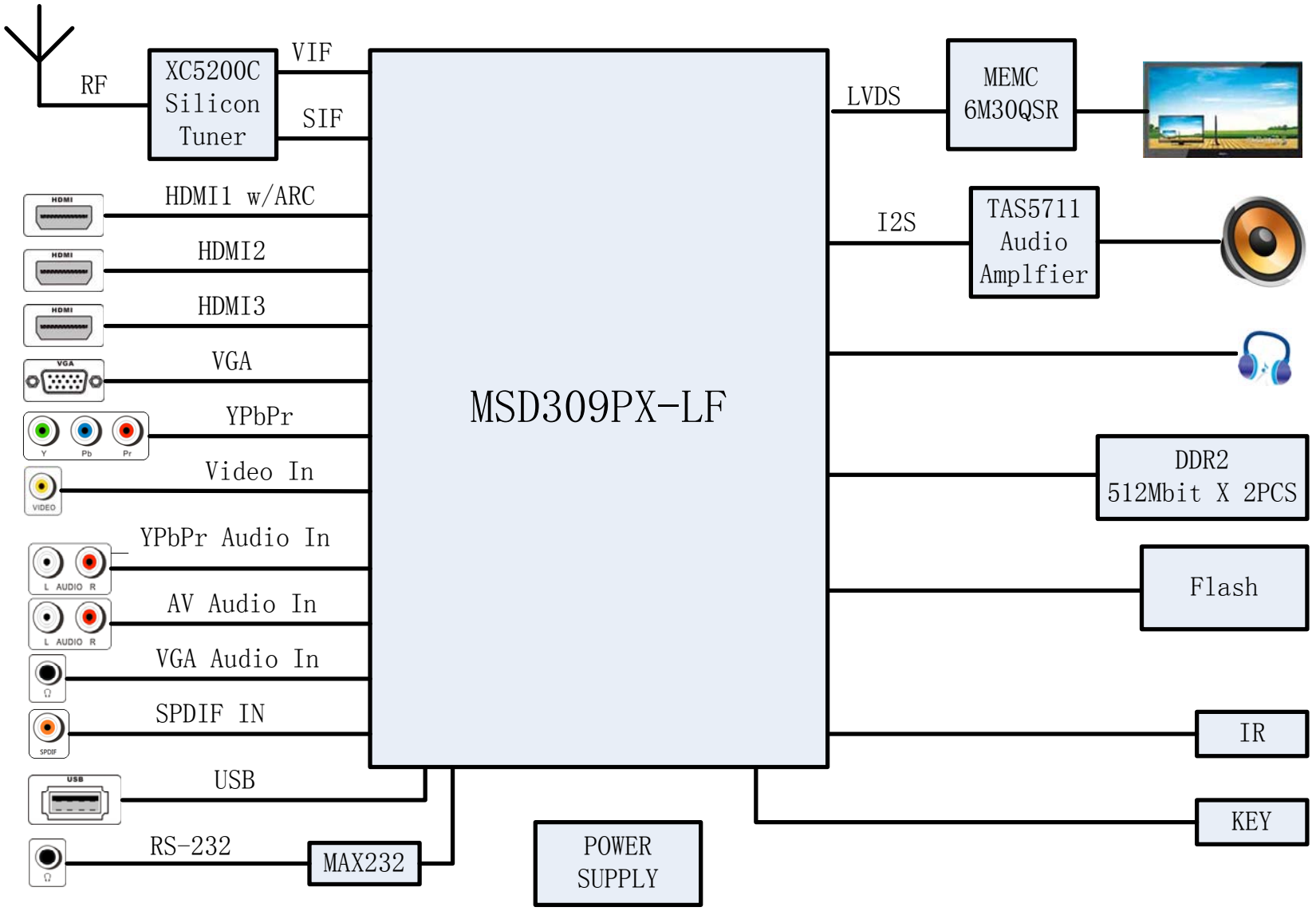
Main parts of the unit：
LCD panel: 31.5 inch AUO T315HW04 VD (1920X1080)
Main chip：MStar MSD309PX-LF
Silicon TUNER：XCeive XC5200C
DDR：NANYA NT5TU32M16DG_AC
Audio power amplifier (D type)：TI TAS5711
FLASH：EN25Q32B-104HIP

8、External ports of the unit:

One group of Video input and RCA L/R input
Three group of HDMI input
One group of VGA input

One group of audio input for VGA and DVI (Mini Phone Jack)
One group of YPBPR input and RCA L/R input
One group of RF
One group of RS232 (Mini Phone Jack)
One group of Earphone output (Mini Phone Jack)
One group of SPDIF (coaxial) output
One group of USB

Block Diagram



IC Block Diagram

1、 MSD309PX

MSD309PX, an SOC solution that supports channel decoding, MPEG decoding, and media-centre functionality enabled by a high performance AV CODEC and CPU

Key features include:

1. Digital and Analog DVB Front-End Demodulator
2. A Multi-Standard A/V Format Decoder
3. The MACE-5 Video Processor
4. Home Theater Sound Processor
5. Peripheral and Power Management

High Performance Micro-processor

. Ultra high speed/performance 32-bit RISC CPU
. Two full duplex UARTs
. Supports USB and ISP programming
. DMA Engine

Transport Stream De-multiplexer

. Supports parallel and serial TS interface, with or without sync signal
. Supports TS input and output for external CI module
. Maximum TS data rate is 104 Mb/sec for serial or 16 MB/sec for parallel
. 32 general purpose PID filters and section filters for each transport stream de-multiplexer
. Supports additional audio/video/PCR filters
. Supports TS DMA channel for time-shift
. Supports 3DES/DES and AES encryption/decryption

MPEG-2 Video Decoder

. ISO/IEC 13818-2 MPEG-2 video MP@HL
. Automatic frame rate conversion
. Supports resolution up to HDTV (1080i, 720p) and SDTV

MPEG-4 Video Decoder

. ISO/IEC 14496-2 MPEG-4 ASP video decoding
. Supports resolutions up to HDTV (1080p@30fps)
. Supports DivX**1** Home Theater & HD profiles **Optional**
. Supports VC-1**Optional**, FLV video format decoding

H.264 Decoder

. ITU-T H.264, ISO/IEC 14496-10 (main and high profile up to level 4.1) video decoding
. Supports resolutions for all DVB, ATSC, HDTV, DVD and VCD
. Supports resolution up to 1080p@30fps
. Supports CABAC and CAVLC stream types
. Processing of ES and PES streams, extraction and provision of time stamps
. Up to 40 Mbits bitrate (Blu-ray spec.)

Hardware JPEG

. Supports sequential mode, single scan
. Supports both color and grayscale pictures
. Following the file header scan the hardware decoder fully handles the decode process
. Supports programmable Region of Interest (ROI)
. Supports formats: 422/411/420/444/422T
. Supports scaling down ratios: 1/2, 1/4, 1/8
. Supports picture rotation

NTSC/PAL/SECAM Video Decoder

. Supports NTSC-M, NTSC-J, NTSC-4.43, PAL (B,D, G, H, M, N, I, Nc), and SECAM standards
. Automatic standard detection
. Motion adaptive 3D comb filter
. Five configurable CVBS & Y/C S-video inputs
. Supports Teletext, Closed Caption (analog CC 608/ analog CC 708/digital CC 608/digital CC 708), V-chip and SCTE

Multi-Standard TV Sound Processor

. SIF audio decoding
. Supports BTSC/A2/EIA-J demodulation

. Supports NICAM/FM/AM demodulation
. Supports MTS Mode Mono/Stereo/SAP in BTSC/EIA-J mode
. Supports Mono/Stereo/Dual in A2/NICAM mode
. Built-in audio sampling rate conversion (SRC)
. Audio processing for loudspeaker channel, including volume, balance, mute, tone, EQ, virtual stereo/surround and treble/bass controls
. Advanced sound processing options available, for example: SRS**1**, BBE**2**, QSound**3**, Audyssey**4**
. Supports digital audio format decoding:
- MPEG-1, MPEG-2 (Layer I/II), MP3, Dolby Digital (AC-3), AAC-LC
- Supports **Optional** Dolby Digital Plus, Dolby Pulse, and MS10 multistream decoder, including Dolby Digital Encoder for transcoding streams to Dolby Digital 5.1 (DDCO)
. Supports MPEG Audio, Dolby Digital, Dolby Digital Plus format AD (Audio Description)
. Supports PVR and time-shifting

Audio Interface

. One SIF audio input interface with minimal external saw filters
. Four L/R audio line-inputs
. Two L/R outputs for main speakers and additional line-outputs
. Supports stereo headphone driver
. I2S digital audio input & output
. S/PDIF digital audio output
. HDMI audio channel processing
. Programmable delay for audio/video synchronization

Analog RGB Compliant Input Port

. Three analog ports support up to 1080P
. Supports PC RGB input up to SXGA@75Hz
. Supports HDTV RGB/YPbPr/YCbCr
. Supports Composite Sync and SOG Sync-on-Green
. Automatic color calibration
. AV-link support

Analogue RGB Auto-Configuration & Detection

. Auto input signal format and mode detection
. Auto-tuning function including phasing, positioning, offset, gain, and jitter detection
. Sync Detection for H/V Sync

DVI/HDCP/HDMI Compliant Input Port

. Three HDMI/DVI Input ports
. HDMI 1.3 Compliant
. HDCP 1.1 Compliant
. 225MHz @ 1080P 60Hz input with 12-bit Deep-color support
. CEC support
. Single link DVI 1.0 compliant
. Robust receiver with excellent long-cable support

MStar Advanced Color Engine (MStarACE-5)

. 10/12-bit internal data processing
. Fully programmable multi-function scaling engine
- Nonlinear video scaling supports various modes including Panorama
- Supports dynamic scaling for VC-1
. High-Quality DTV video processor
- 3D motion video deinterlacer with motion object stabilizer
- Edge-oriented deinterlacer with edge and artifact smoother
- Automatic 3:2/2:2/M:N pull-down detection and recovery
- 3D multi-purpose noise reduction for DTV or lousy air/cable input
- MPEG artifact removal including de-blocking and mosquito noise reduction
- Arbitrary frame rate conversion
. MStar Professional Picture Enhancement:
- Dynamic brilliant and fresh color
- Dynamic *Blue Stretch*
- Intensified contrast and details
- Dynamic *Vivid Skin*
- Dynamic sharpened Luma/Chroma edges
- Global and local dynamic depth of field perception

- Accurate and independent color control
- Supports sRGB and xvYCC color processing
- Supports HDMI 1.3 deep color format
. Programmable 12-bit RGB gamma CLUT

Output Interface

. Single/dual link 8/10-bit LVDS output
. Supports panel resolution up to Full-HD (1920x1080) @ 60Hz
. Supports TH/TI format
. Supports dithering options to 6/8-bit output
. Spread spectrum output for EMI suppression

CVBS Video Encoder

. Supports all NTSC/PAL TV Standard
. Stand-alone scaling engine
. Programmable Hue, Contract, Brightness
. Supports TTX/CC/WSS output

CVBS Video Output

. Allows CVBS output of all source inputs

3D-like Graphics Engine

. Hardware Graphics Engine for responsive interactive applications
. Supports point draw, line draw, rectangle draw/fill, text draw and trapezoid draw
. BitBlt, stretch BitBlt, trapezoid BitBlt, mirror BitBlt and rotate BitBlt
. Supports alpha and destination alpha compare
. Raster Operation (ROP)
. Support Porter-Duff

VIF Demodulator

. Compliant with NTSC M/N, PAL B, G/H, I, D/K, SECAM L/L' standards
. Audio/Video dual-path processor
. Stepped-gain PGA with 25 dB tuning range and 1 dB tuning resolution
. Maximum IF gain of 37 dB
. Programmable TOP to accommodate different tuner gain and SAW filter insertion loss to optimize noise

and linearity performance
. Multi-standard processing with single SAW
. Supports silicon tuner low IF output architecture

DVB-T Demodulator

. Digital carrier frequency offset correction: ±500KHz
. Optimised for SFN channels with pre/post-cursive echoes inside/outside the guard
. Acquisition range ±857kHz includes up to 3x ±1/6 MHz transmitter offset
. Meets Nordig Unified 1.0.3, D-Book 5.0, EICTA E-Book/C-Book test requirement
. ±400kHz internal carrier offset recovery range
. 6.8 usecs echo cancellation at 7 Msym/s
. Supports IF, low-IF, zero-IF inputs
. Ultra-fast automatic blind UHF/VHF channel scan (constellations and symbol rate)

Connectivity

. Two USB 2.0 host ports
. USB architecture designed for efficient support of external storage devices in conjunction with off air broadcasting

Miscellaneous

. DRAM interface supporting two 16-bit DDR2 @ 1066MHz
. Supports PVR
. Supports Common Interface for conditional access support
. Bootable SPI interface with serial flash support
. Parallel interface for external OneNAND and NAND flash support
. Power control module with ultra low power MCU available in standby mode
. 523-ball LFBGA package
. Operating Voltages: 1.26V (core), 1.8V (DDR2),
2.5V and 3.3V (I/O and analog)

2、 TUNER IC XC5200C

The Single-Chip Multi-Standard Tuner XC5200C supports all analog TV formats transmitted worldwide in the 42-1000 MHz band on either cable or terrestrial broadcast channels. It implements on-chip tuning, and channel filtering without external (SAW) filters and has no manually tunable parts.

The broadband tuner converts the selected channel into an Intermediate Frequency (IF), which is thensampled by an internal high-resolution analog-to-digital converter (A/D) for further processing.

The IF signals are filtered using a standard-dependent high-rejection channel filter and converted to a userprogrammable output frequency. At the output of the D/A converter, the TV signal is low-pass filtered using a high-performance smoothing filter and input to a variable gain amplifier. The IF output amplifier gain can be controlled via an external analog signal on Vagc.

The XC5200C architecture is summarized in Figure 1. XC5200C Block Diagram.

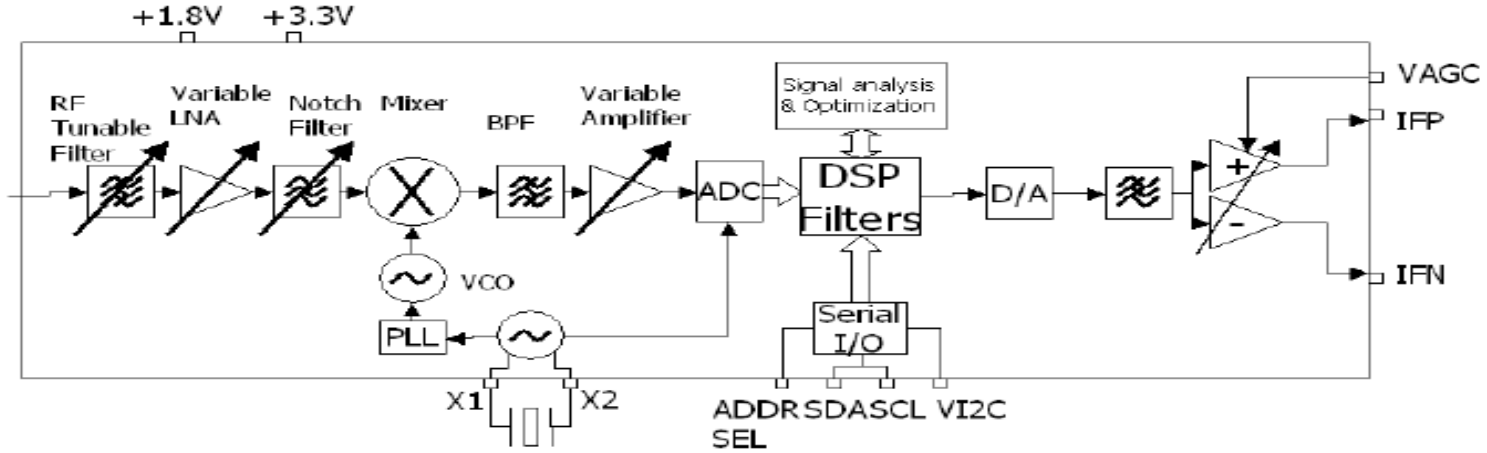
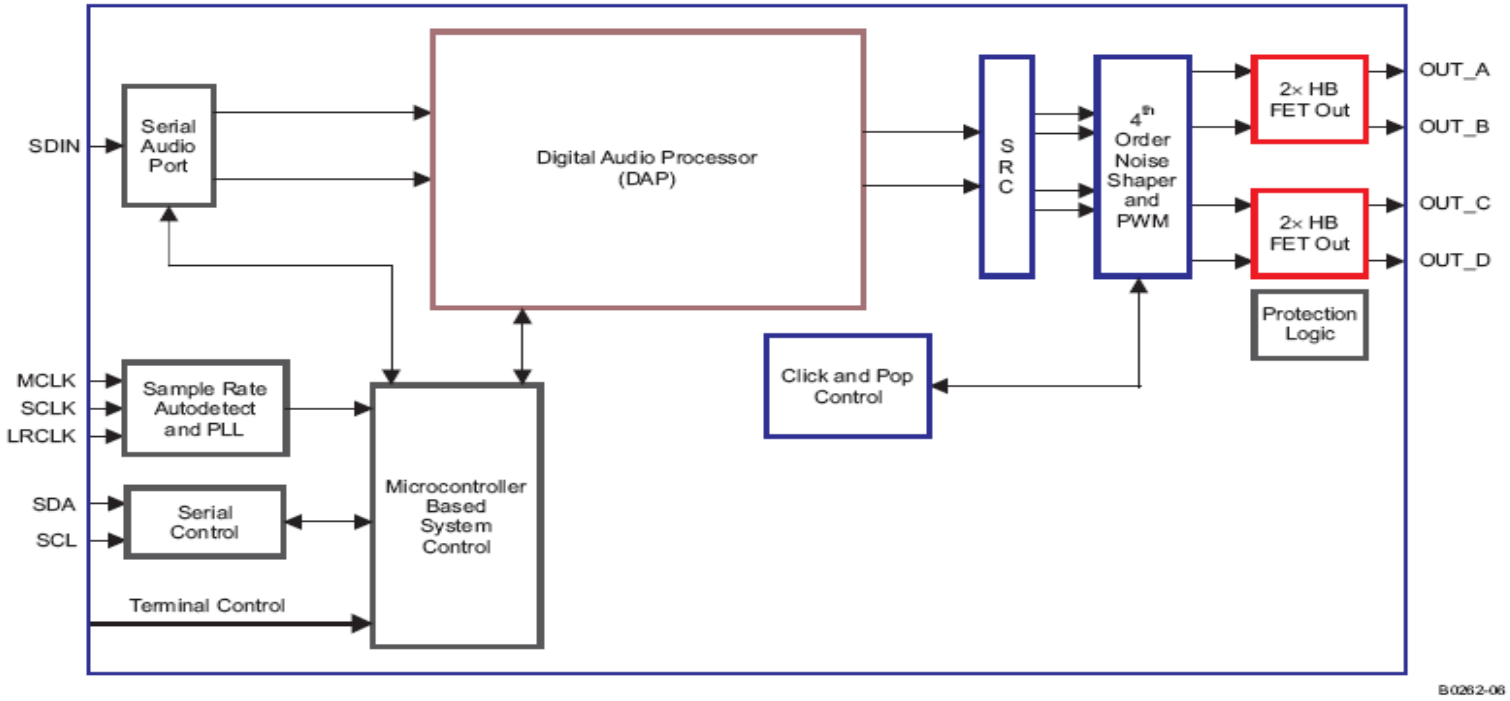


Figure 1. XC5200C Block Diagram

3、 AMP IC TAS5711

The TAS5711 is a 20-W, efficient, digital audio power amplifier for driving stereo bridge-tied speakers. One serial data input allows processing of up to two discrete audio channels and seamless integration to most digital audio processors and MPEG decoders. The device accepts a wide range of input data and data rates. A fully programmable data path routes these channels to the internal speaker drivers.

The TAS5711 is an I2S slave-only device receiving all clocks from external sources. The TAS5711 operates with a PWM carrier between 384-kHz switching rate and 352-KHz switching rate depending on the input sample rate. Oversampling combined with a fourth-order noise shaper provides a flat noise floor and excellent dynamic range from 20 Hz to 20 kHz.



4、 MEMC IC 6M30QSR

GENERAL DESCRIPTION

The MST6M30QSR is a highly integrated ASIC for doubling the frame rate of the LVDS video input to provide a conversion from 50Hz to 100Hz or 60Hz to 120Hz. The MST6M30QSR comprises dual-channel LVDS receiver, film source detection and inversion, motion frame rate conversion, color space conversion and management, and single/dual/quad-channel LVDS output. The LVDS receiver and transmitter in MST6M30QSR support spread spectrum for EMI reduction. With MFCTRE technology, the MST6M30QSR provides clear and halo-free moving picture quality without motion blur or judder. With individual RGB gamma correction, the MST6M30QSR is capable to optimize the panel with best display quality and color saturation, and ideally suited to work with front-end ATV or DTV chip and WUXGA 100/120Hz panels.

FEATURES

Input Interface

. Single/dual channel 8/10 bit LVDS input
. Each input LVDS channel frequency supports up to 100 MHz
. One channel input supports up to WXGA (1366x768)
. Two channel inputs support up to WUXGA (1920x1200)
. Input mode supports JEIDA / VESA mode
. Image capturing window is defined by DE signal
. Supports flexible aging mode
. Supports 3D LR side by side content
. Supports 3D Top bottom content
. Supports 3D Frame packing mode
. Supports 3D Frame alternative mode
. Supports 3D Line alternative mode

Output Interface

. Single/dual/quad link 8/10 bit LVDS output
. Each output LVDS channel frequency supports up to 100 MHz
. Supports two channel LVDS up to WXGA (1366x768) @ 120Hz
. Supports four channel LVDS up to 1920x1080 @ 120Hz

. Supports 2/4 phase output
. Supports left-right screen partition
. Supports TH/TI format
. Supports dithering options
. Spread spectrum output frequency for EMI suppression
. Support 60/120Hz 3D passive panel (line alternative mode)
. Support 240Hz panel (two chip solution)
. Support active shutter glasses control

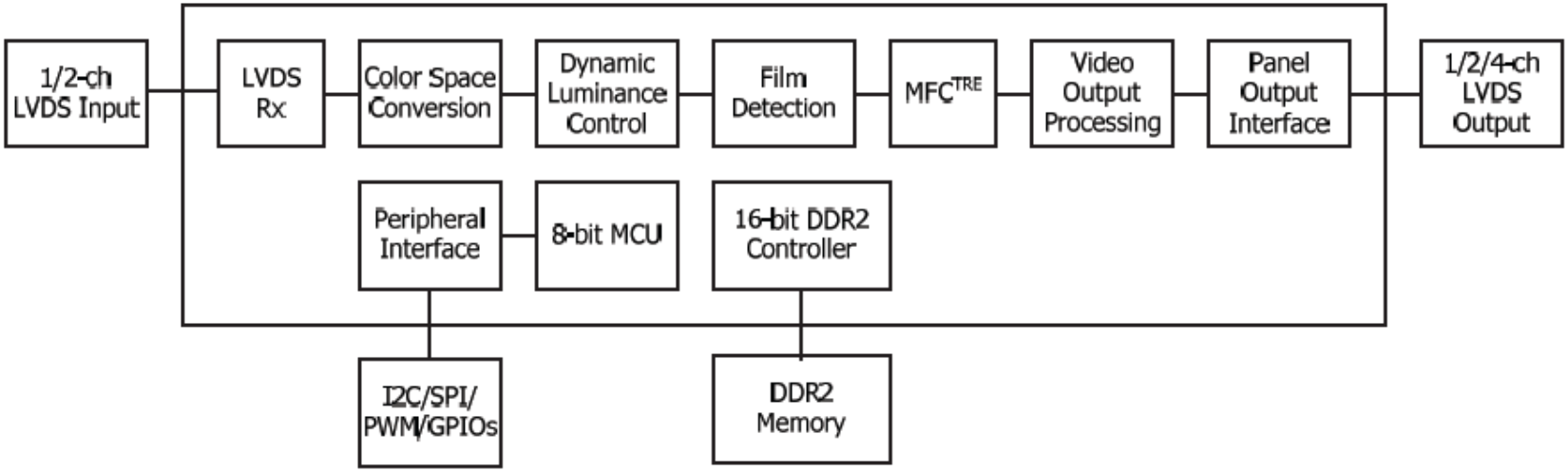
Video Processing

. MFCTRE (Motion Frame Conversion – Professional Edition) supports:
. Wider searching range
. Refined judder-free motion video and film
. Motion blur elimination to improve MPRT
. Advanced halo and artifact elimination
. Output frame rate 50/60/100/120 f/sec
. Supports MFCTRE under WUXGA resolution
. Automatic 2:2 / 3:2 film mode detection
. Supports 2:2 / 3:2 pull-down reverse processing
. Support 1080p 24fps 5:5 pull-down
. Supports 10-bit 4:4:4 processing
. Brightness contrast saturation adjustment
. White balance adjustment
. Supports Gamma correction per bit and FRC function for 16.7M color selection
. Supports black insertion
. Supports OSD area handling
. Splits screen demo for motion frame conversion

Miscellaneous

. Embedded 8-bit Microcontroller
. Supports 16-bit DDR2 interface
. Supports I2C, SPI, PWM, and GPIOs

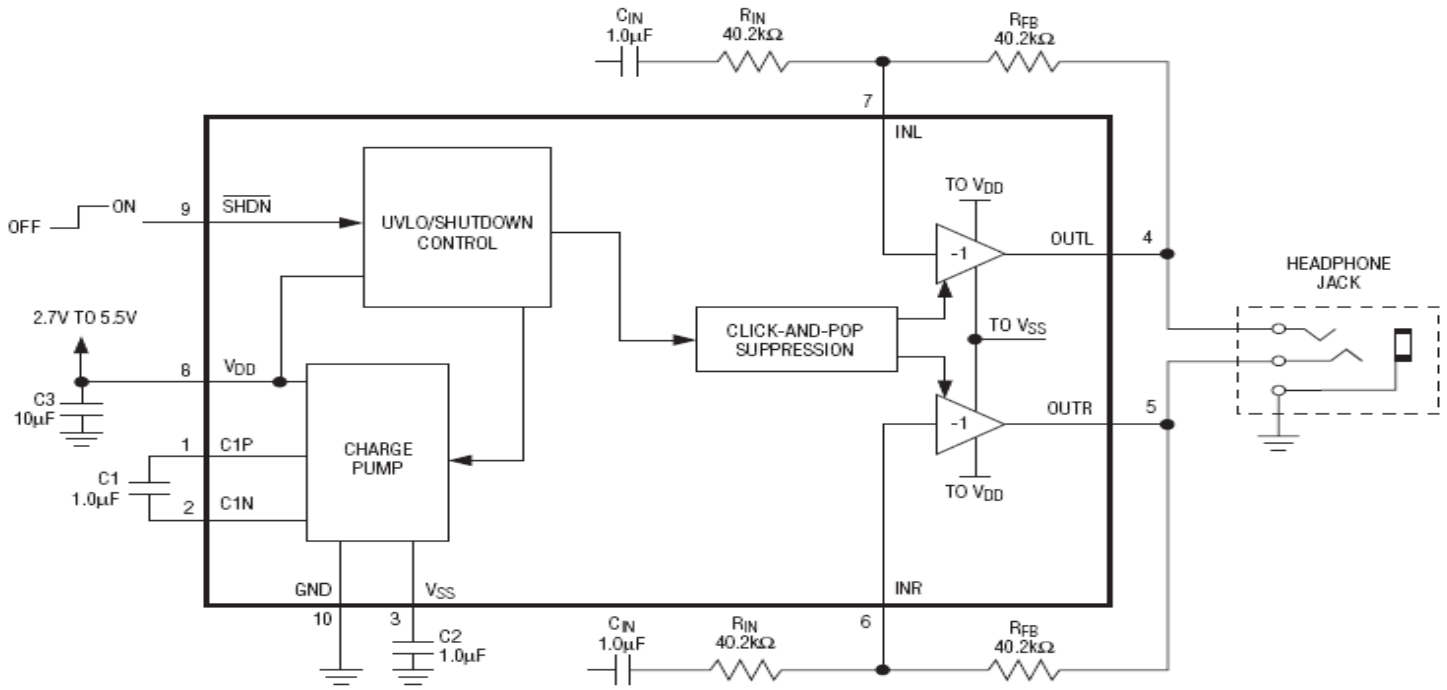
. Supports booting from internal SRAM, external EEPROM, and SPI flash
. 216-pin EPLQFP package



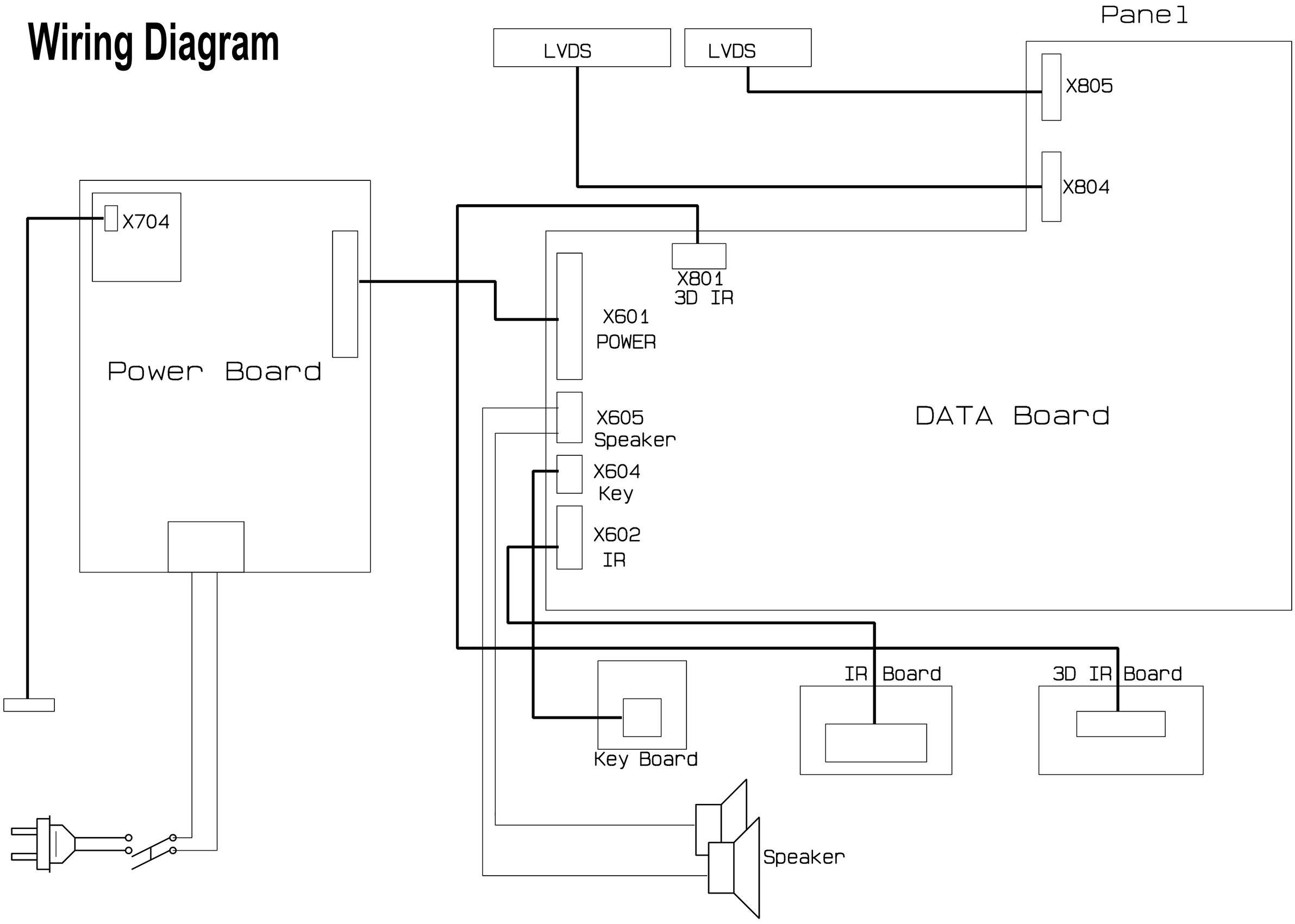
5、 AUDIO IC MAX9820

The MAX9820 Windows Vista®-compliant stereo headphone amplifier is designed for portable Equipment where board space is at a premium. It features Maxim's DirectDrive® architecture to produce a ground-referenced output from a single supply, eliminating the large output-coupling capacitors required by conventional single-supply headphone amplifiers.

The MAX9820 features an undervoltage lockout that prevents over discharging of the battery During brownout conditions, click-and-pop suppression that eliminates audible transients on startup, a low-power shutdown mode, and thermal-overload and short-circuit protection. Additionally, the MAX9820 suppresses RF radiation received by input and supply traces acting as antennas and prevents the amplifier from demodulating the coupled noise.

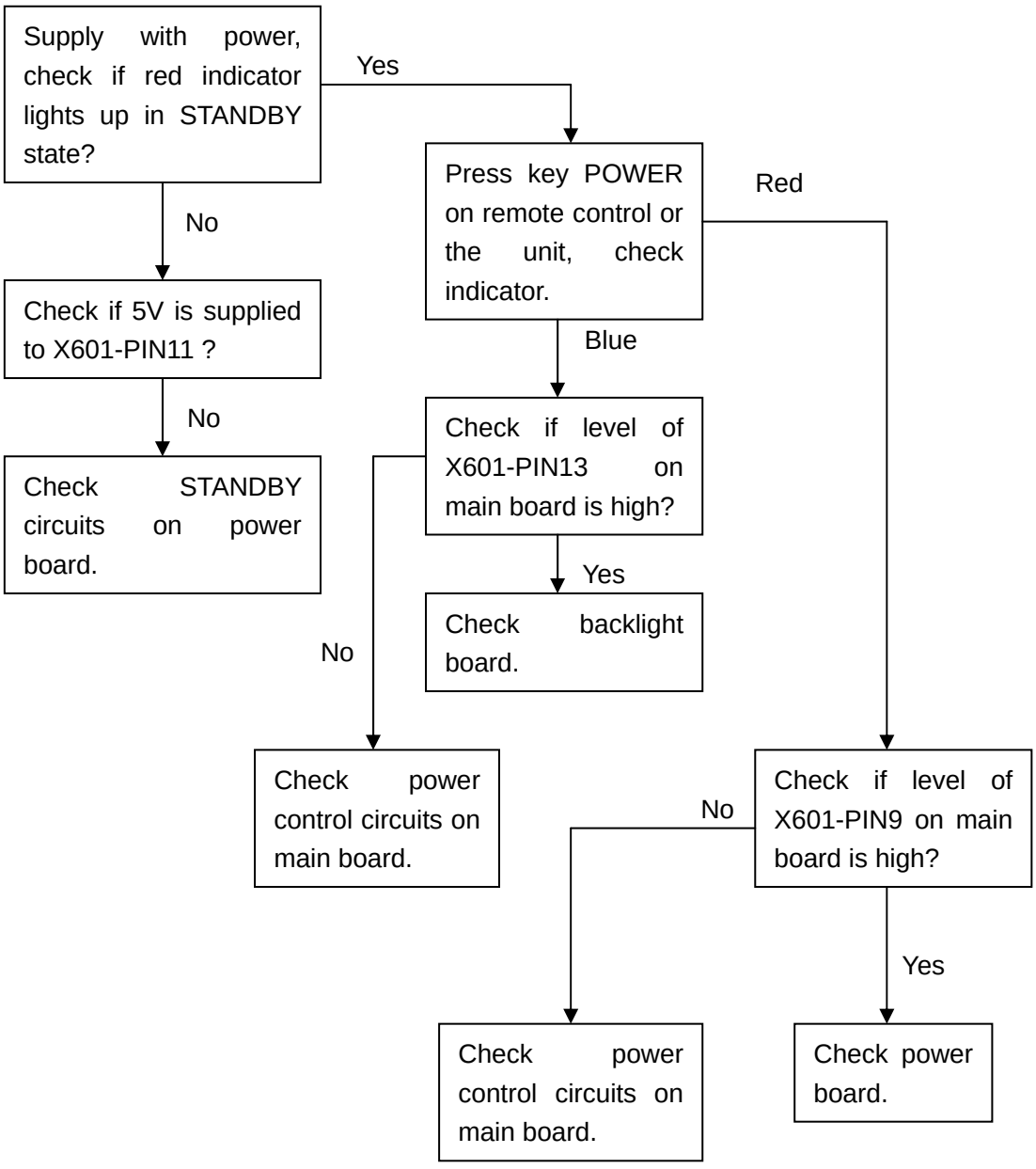

CIN
1.0µF
RIN
40.2kΩ
RFB
40.2kΩ
7
INL
TO VDD
OFF
ON
9
SHDN
UVLO/SHUTDOWN
CONTROL
-1
OUTL
4
HEADPHONE
JACK
2.7V TO 5.5V
CLICK-AND-POP
SUPPRESSION
TO VSS
8
VDD
C3
10µF
OUTR
5
-1
1
C1P
CHARGE
PUMP
C1
1.0µF
2
C1N
TO VDD
GND
VSS
INR
10
3
C2
1.0µF
CIN
1.0µF
RIN
40.2kΩ
6
RFB
40.2kΩ

Wiring Diagram

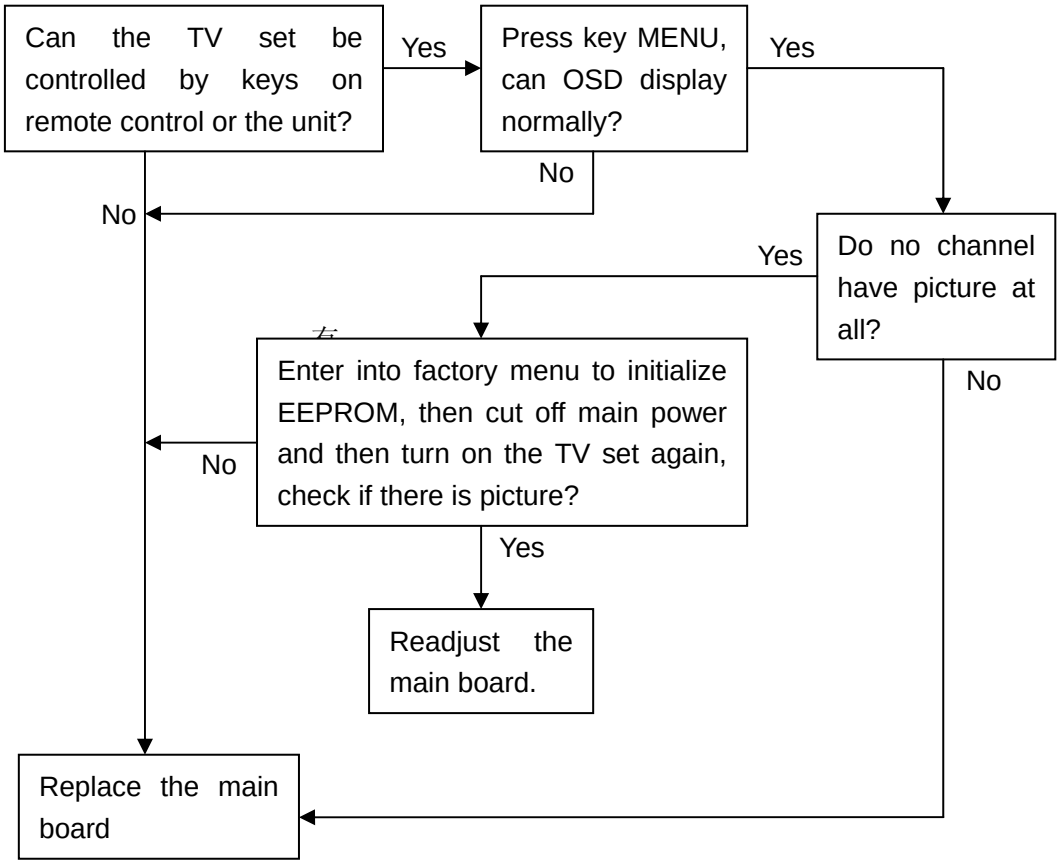


Troubleshooting Block Diagram

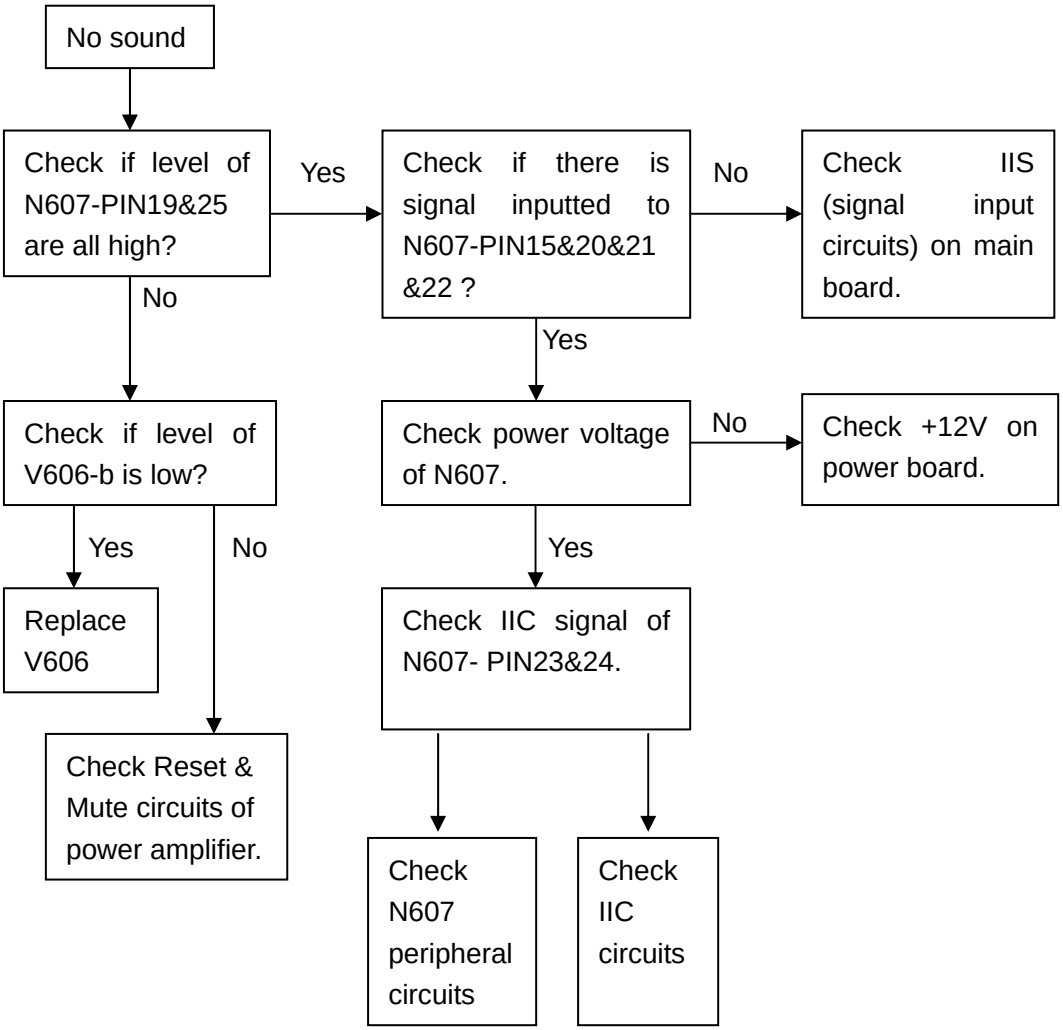
1．Panel doesn’t light up.


Supply with power, check if red indicator lights up in STANDBY state?
Yes
No
Check if 5V is supplied to X601-PIN11 ?
No
Check STANDBY circuits on power board.
Press key POWER on remote control or the unit, check indicator.
Red
Blue
Check if level of X601-PIN13 on main board is high?
Yes
Check backlight board.
No
Check power control circuits on main board.
Check if level of X601-PIN9 on main board is high?
No
Yes
Check power control circuits on main board.
Check power board.

2. No picture, but backlight is normal:


Can the TV set be controlled by keys on remote control or the unit?
Yes
Press key MENU, can OSD display normally?
Yes
No
No
Do no channel have picture at all?
Yes
No
Enter into factory menu to initialize EEPROM, then cut off main power and then turn on the TV set again, check if there is picture?
No
Yes
Readjust the main board.
Replace the main board

3. No sound, but picture is normal:



N107
NT5TU32M16DG-AC

N102
MX25L12845EMI-10G

N103
EN25Q32B-104HIP

N104
AT24C32A/SN

N105
CAT24C04WI

N106
APX810-29SAG-7

N108
NT5TU32M16DG-AC

N101 -A MSD309PX-LF-V1

MIUA

MIUB

N101 -D MSD309PX-LF-V1

PWM

SAR

SPI

UART/I2CS

I2CM

IR

XTAL

RESET

USB

GPIO_TCON

GPIO

GPIO_PM

N101 -C MSD309PX-LF-V1

HDMI

AUDIO

I2S

SPDIF

N101 -E MSD309PX-LF-V1

RGB

CVBS

		名称	编号
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版 次	更改单号		版次 A1.0
更改记录			第 页 共 页
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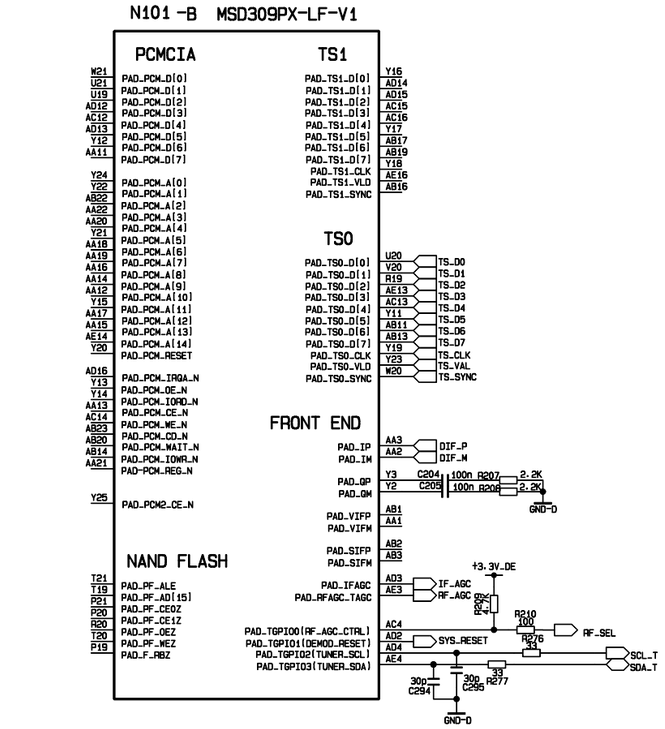
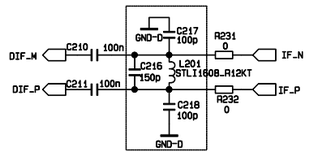
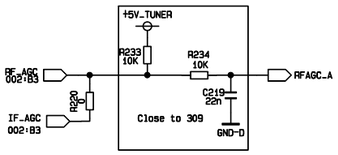
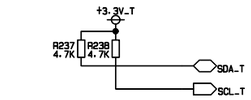
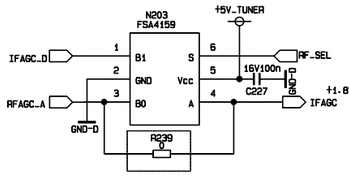
审 核			
标准化			厦门华侨电子股份有限公司
工 艺			
批 准			

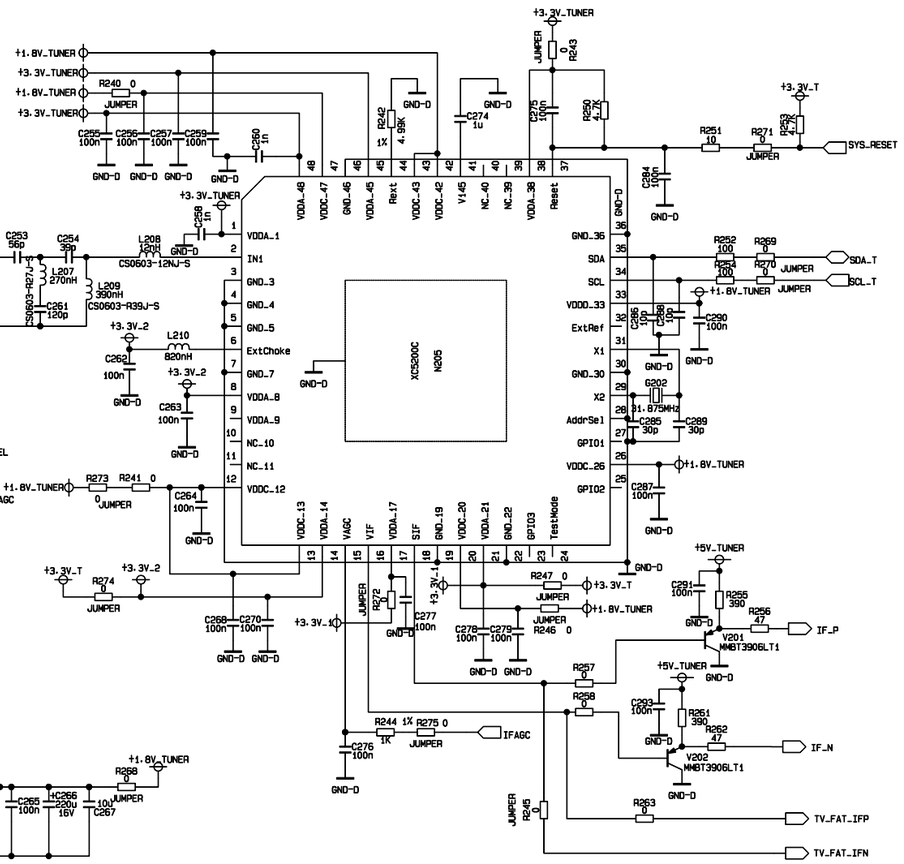


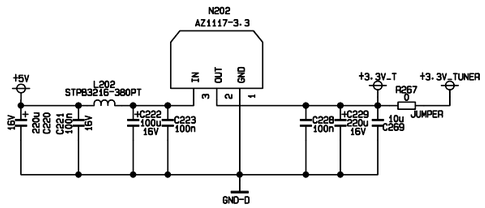


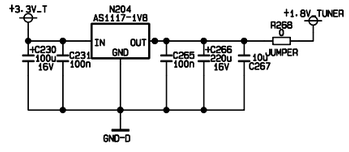


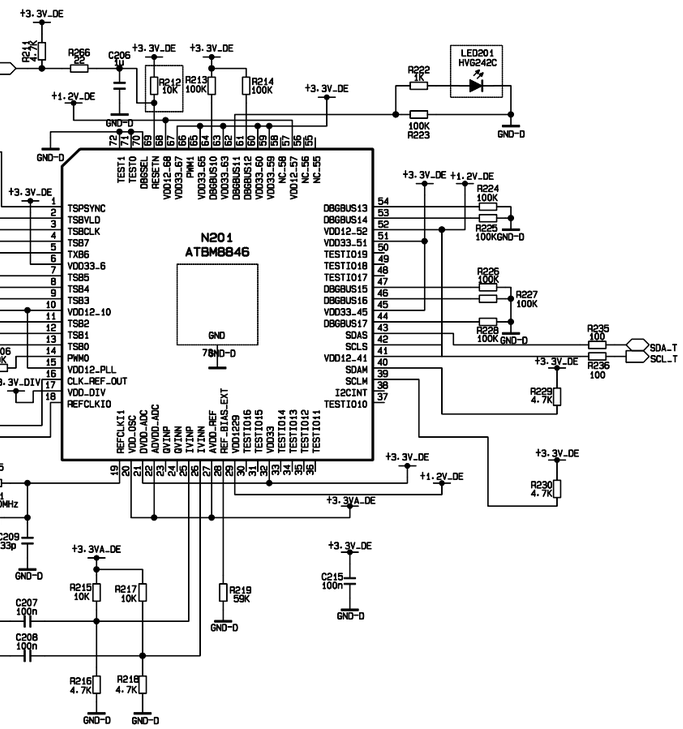


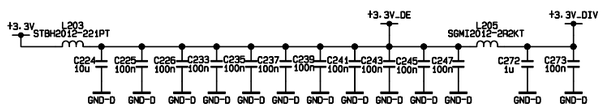


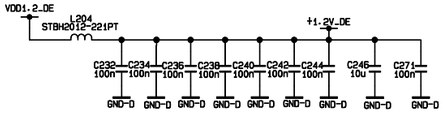


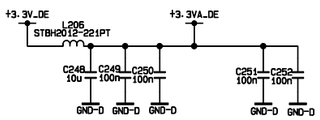


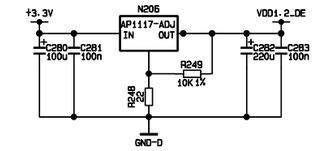


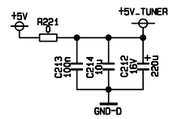












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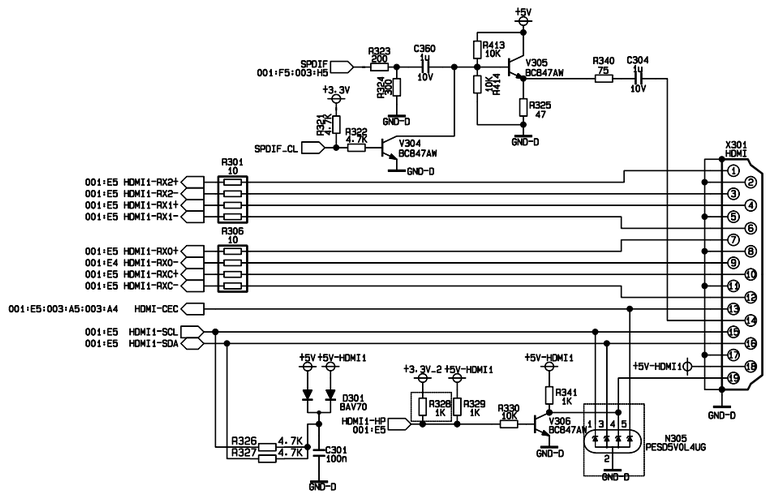
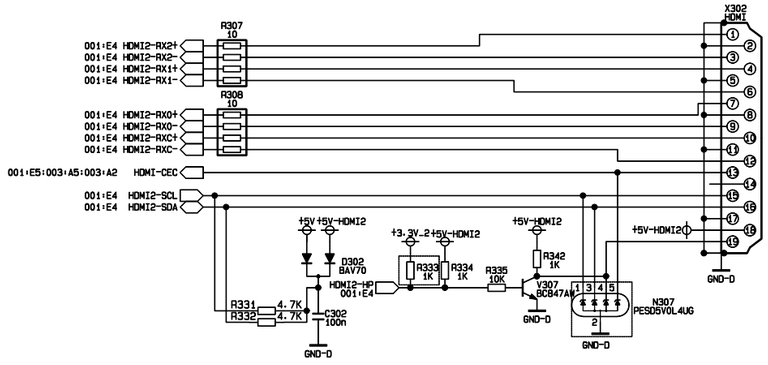
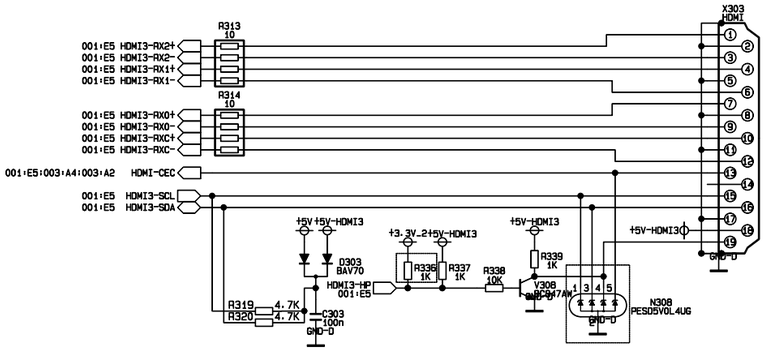
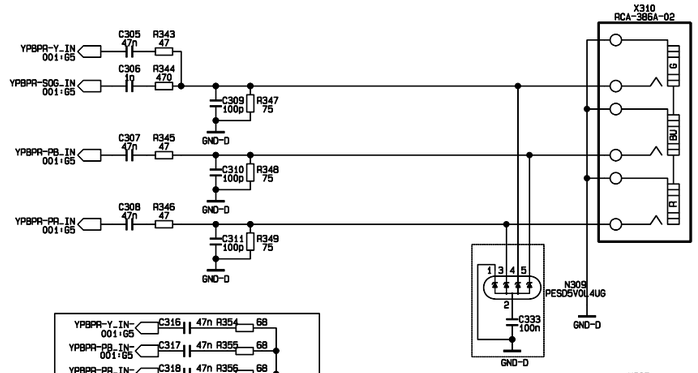
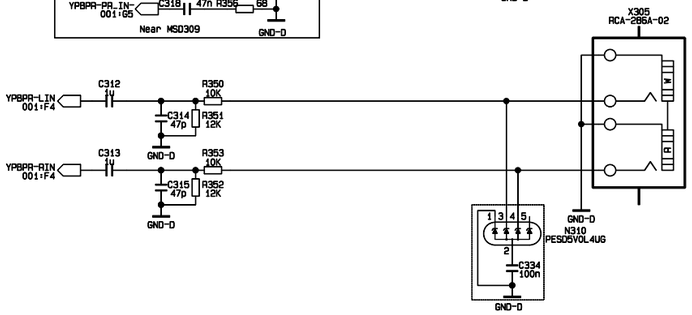
审 核			
标准化			厦门华侨电子股份有限公司
工 艺			
批 准			

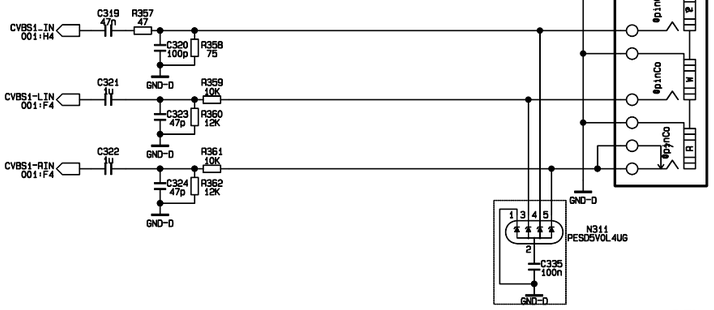


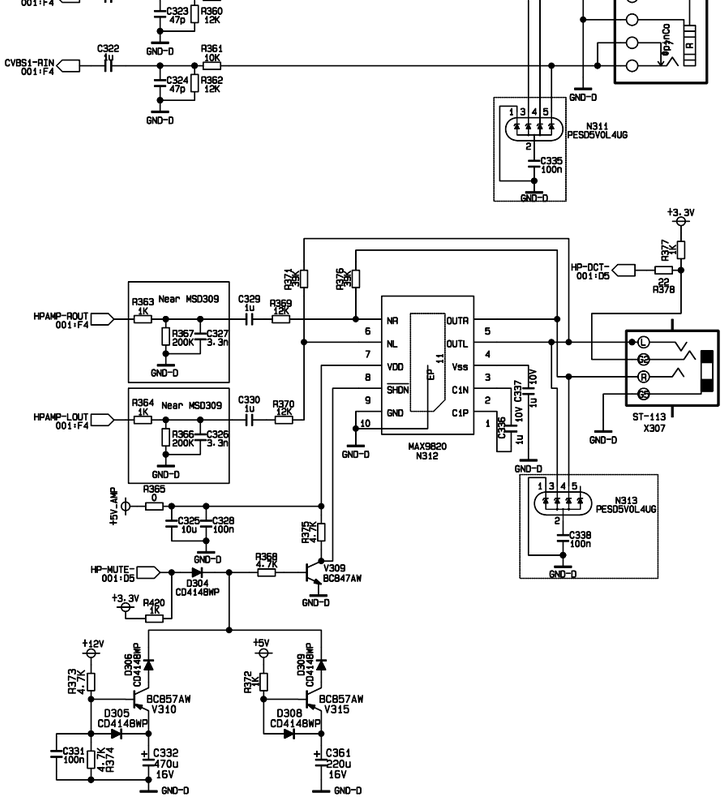


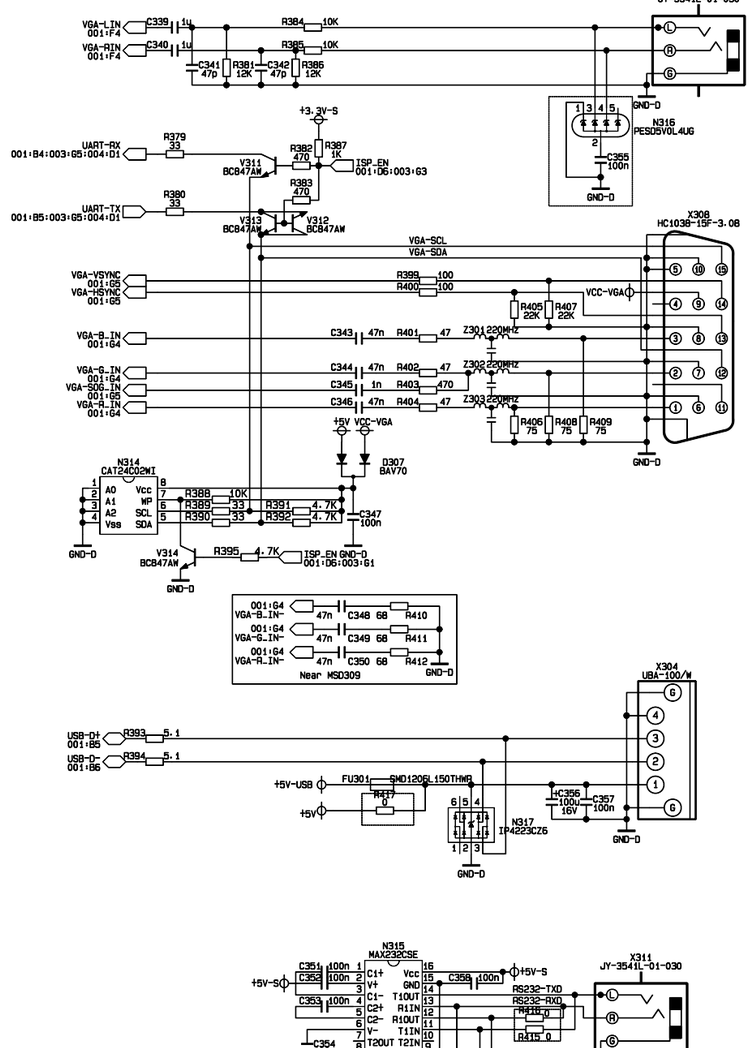












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审 核			
标准化			厦门华侨电子股份有限公司
工 艺			
批 准			

N803
MST6M30QSR-LF

N804
NT5TU32M16DG-BE

		名称	编号
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版 次	更改单号		版次
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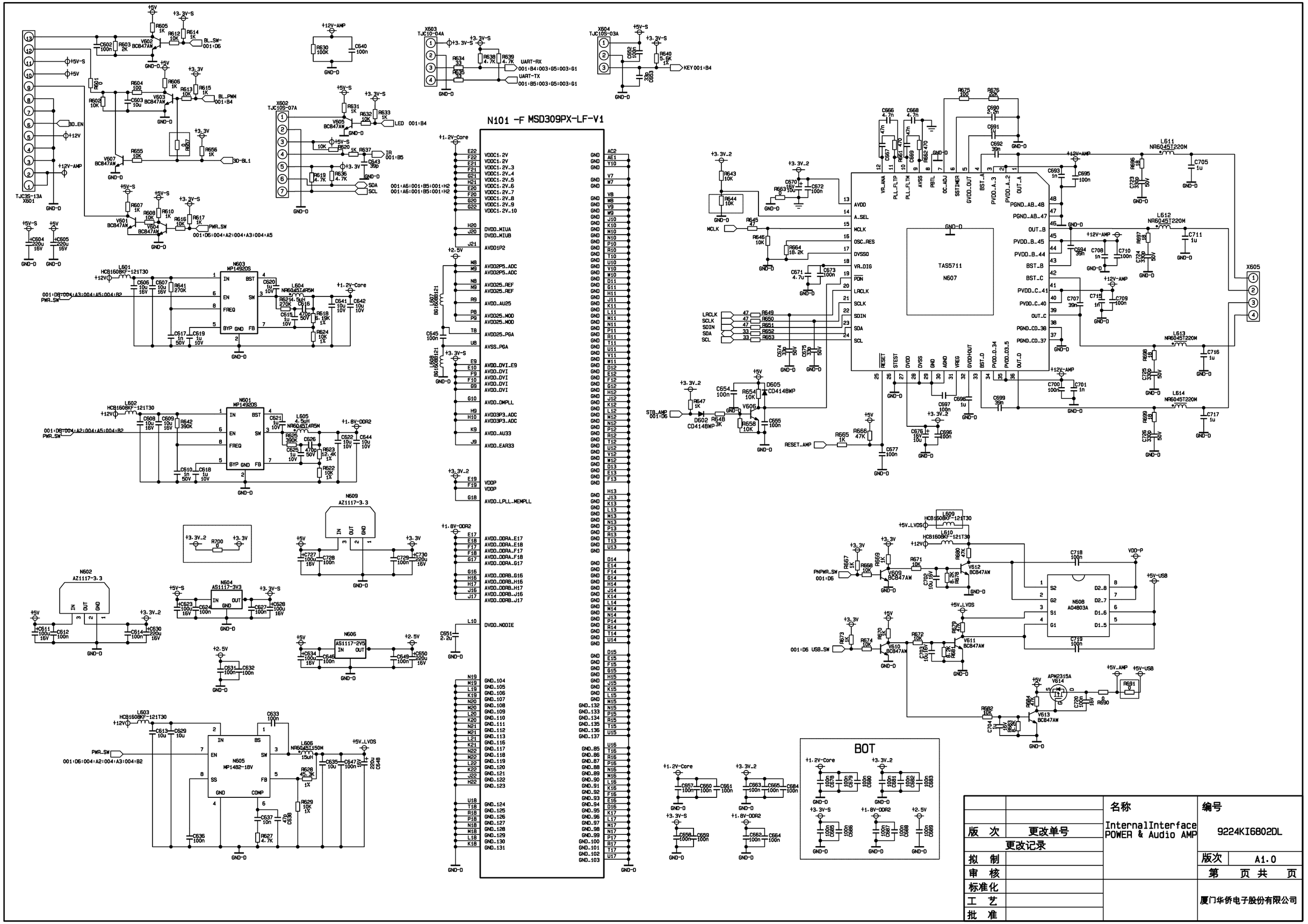

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审 核			
标准化			厦门华侨电子股份有限公司
工 艺			
批 准			

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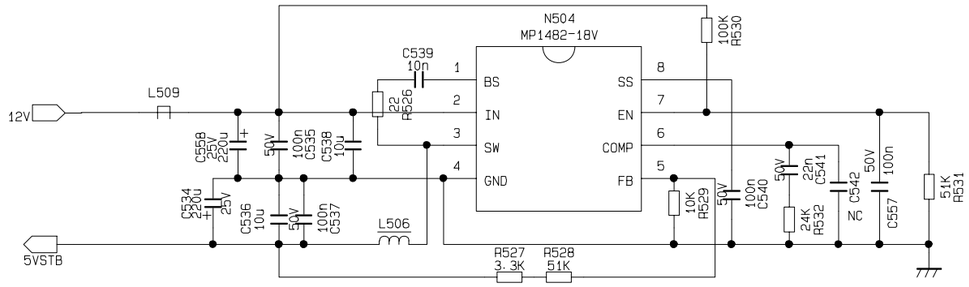

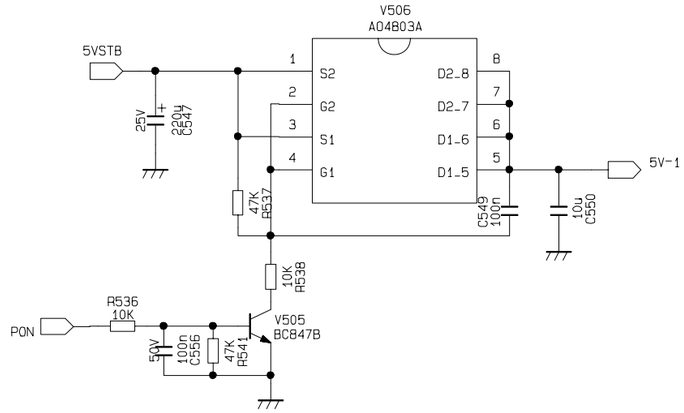

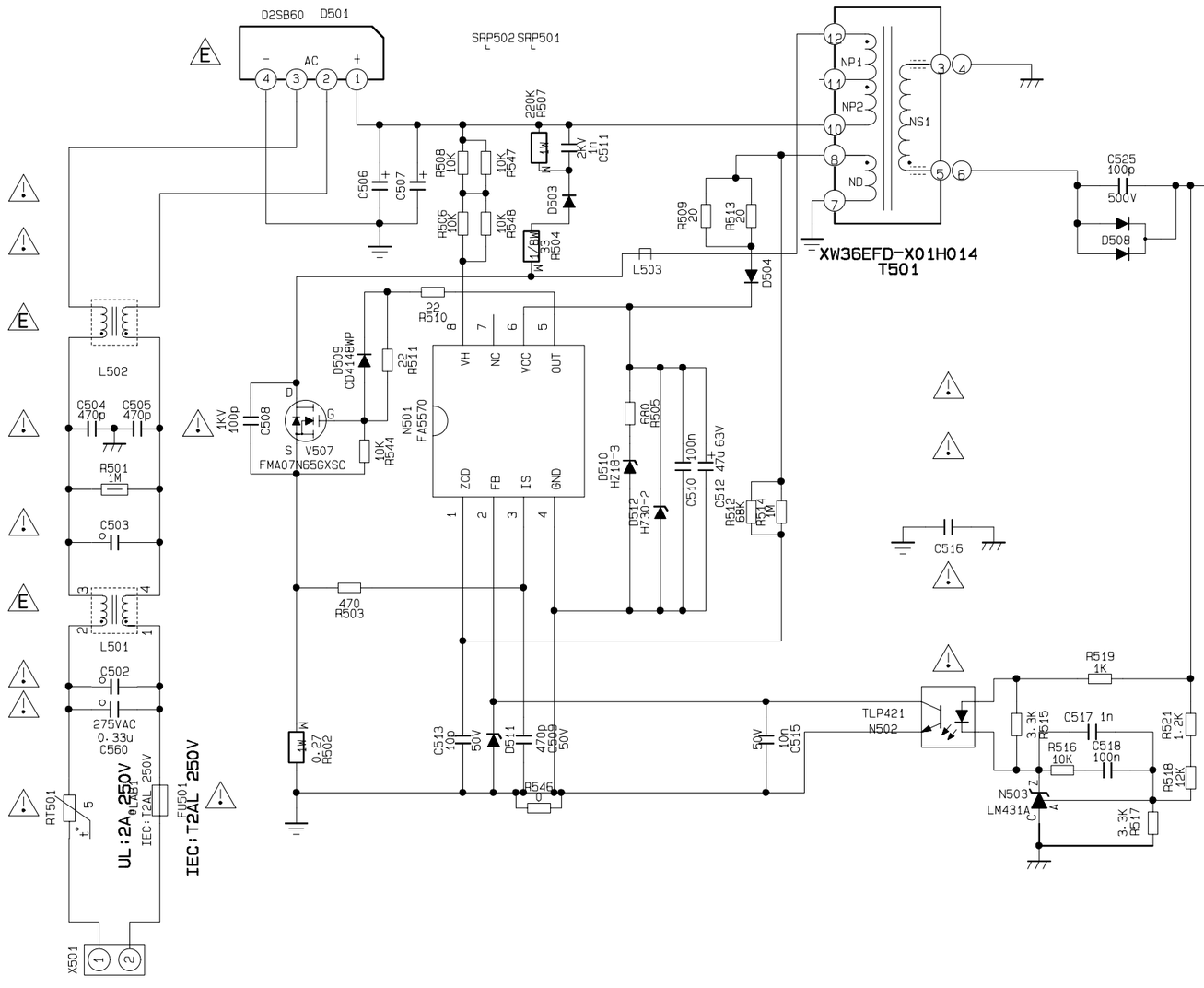

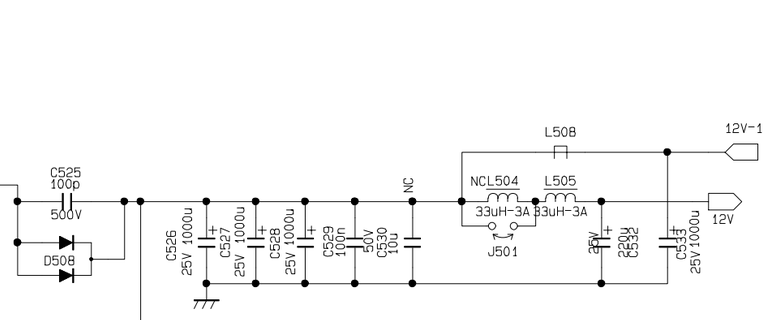

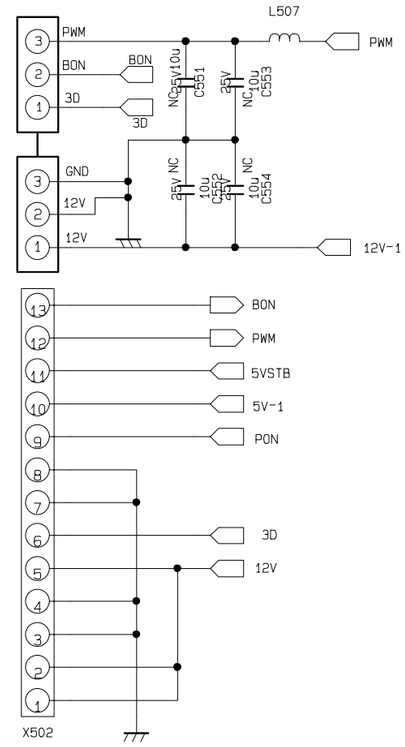

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审 核			
标准化			厦门华侨电子股份有限公司
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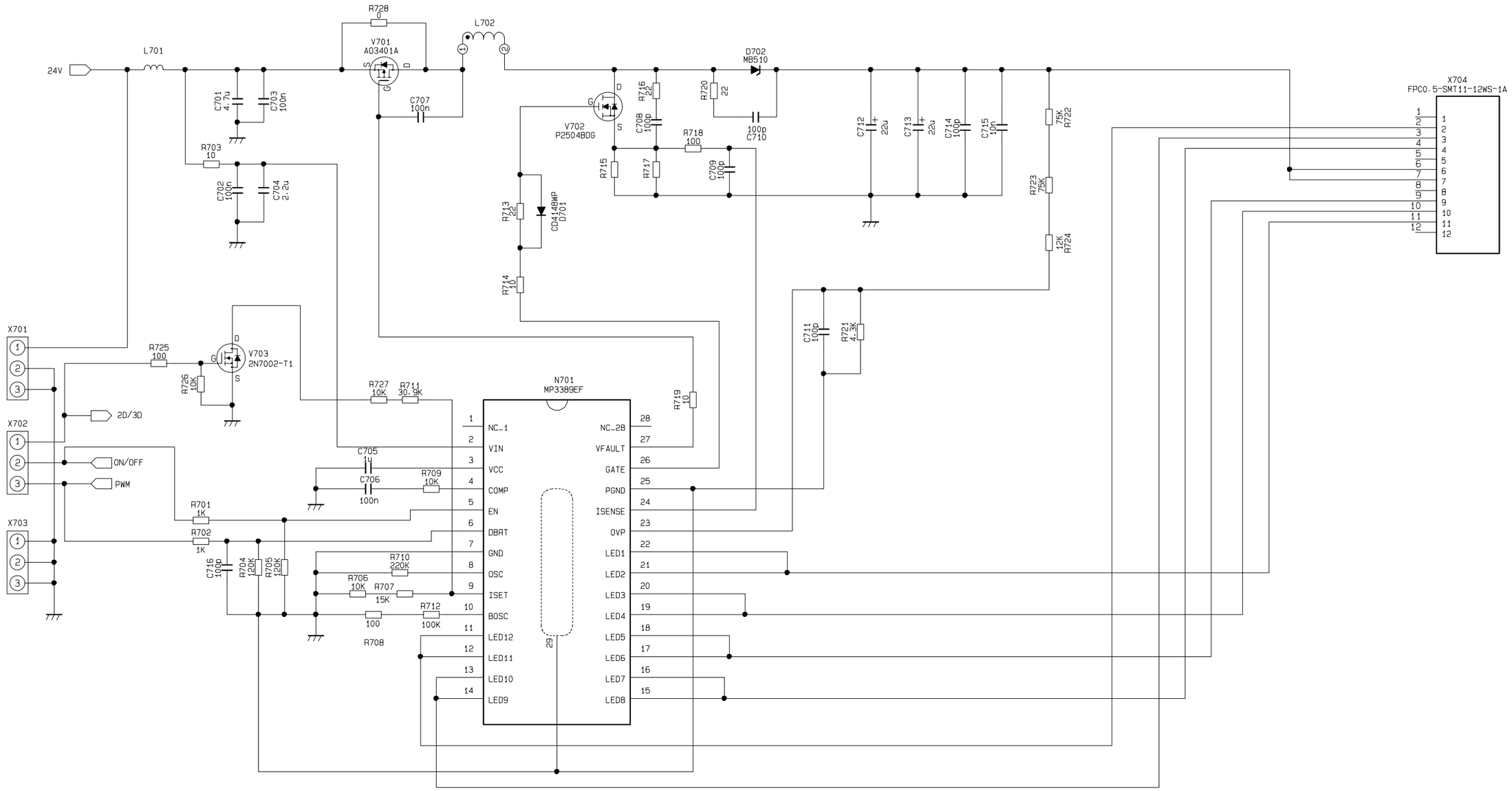

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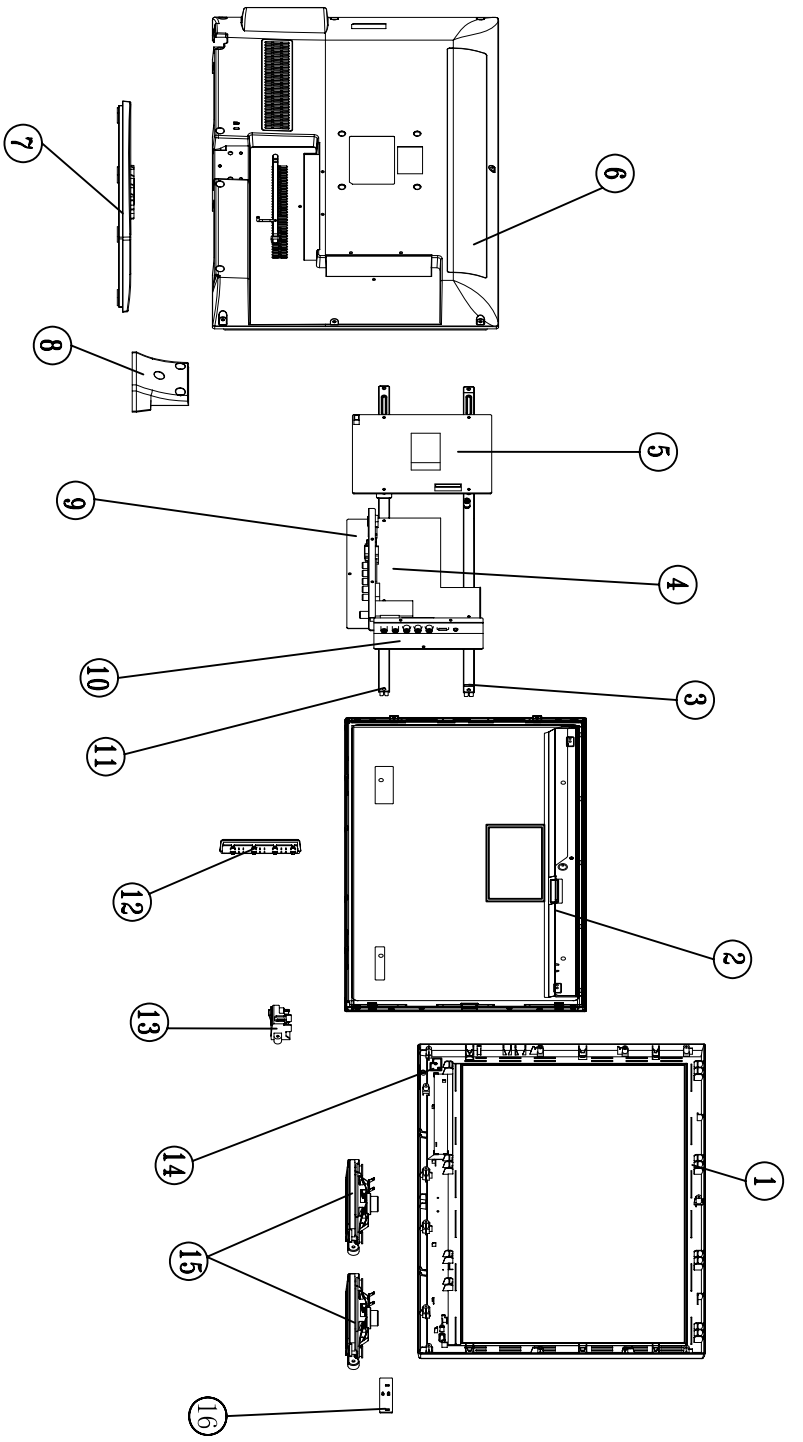
审　核			第　页　共　页
标准化			
工　艺			厦门华侨电子股份有限公司
批　准			

APPENDIX-A: Main assembly 9224KI6812 LED-24XR113D

NAME	NO.	MAIN COMPONENT AND IT'S NO.		
Main board	XI6KI00701B0	N101	MSD309PX-LF	5270309003
		N607	TAS5711	5275711001
		N103	EN25Q32B-104HIP	5272532007
		N803	MST6M30QSR-LF	5270630001
		N312	MAX9820	5279820001
IR board	XI635KI00903			
Key board	XI635MS00801			
Power board	XI6KI00720B0			
Remote control	XI6010900802	RC-908-0A		
Panel	XI5203248505	V236H3-LS1		

APPENDIX-B: Exploded view (LED-24XR113D)



PART LIST OF EXPLODED VIEW

REF.No.	DESCRIPION
1	Front cabinet assembly
2	Display panel
3	Main board connective bar (up)
4	Main board assembly
5	Power board assembly
6	Back cover assembly
7	Pedestal assembly
8	Standing pole
9	Interface baffle (down)
10	Interface baffle (size)
11	Main board connective bar (down)
12	Key board assembly
13	Powr cord bracket
14	3D IE assembly
15	Speaker assembly
16	IR assembly

Note: Design and specification are subject to change without notice.

PART LIST

LED-24XR113D ver.1.0

REF.No.	PARTS No.	DESCRIPION	Q'TY	REMARK
1	XI6624680060	Front cabinet assembly	1	
2	XI5203248505	Display panel	1	V236H3-LS1
3	XI58A0B92700	Main board connective bar (up)	1	
4	XI6KI00701B0	Main board assembly	1	
5	XI6KI00720B0	Power board assembly	1	
6	XI672468H050	Back cover assembly	1	
7	XI6150111000	Pedestal assembly	1	
8	XI58D0030310	Standing pole	1	
9	XI5810D78020	Interface baffle (down)	1	
10	XI5810F77910	Interface baffle (size)	1	
11	XI58A0B92600	Main board connective bar (down)	1	
12	XI635MS00801	Key board assembly	1	
13	XI58B004361A	Powr cord bracket	1	
14	XI6KI00707A0	3D IE assembly	1	
15	XI6170894000	Speaker assembly	1	
16	XI635KI00903	IR assembly	1	
17	XI6010900802	Remote control	1	
18	XI5944039670	User manual	1	

- Only the parts in above list are used for repairing.
- Other parts except the above parts can't be supplied.

Appendix: Installing the Stand

If the stand is provided, please read these instructions thoroughly before attempting this installation.
You must install your TV into the stand in order for it to stand upright on a cabinet or other flat surface. If you intend to mount your TV on a wall or other vertical surface, you must remove the stand column.

Cautions:

Make sure that you handle your TV very carefully when attempting assembly or removal of the stand. If you are not sure of your ability to do this, or of your ability to use the tools necessary to complete this job, refer to a professional installer or service personnel. The manufacturer is not responsible for any damages or injuries that occur due to mishandling or improper assembly.

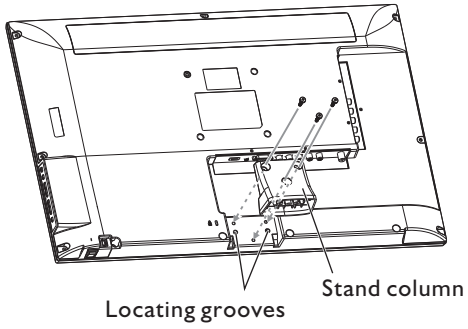
When using a table or bench as an aid to assembly, make sure that you put down a soft cushion or covering to prevent accidental scratching or damage to your TV's finish.

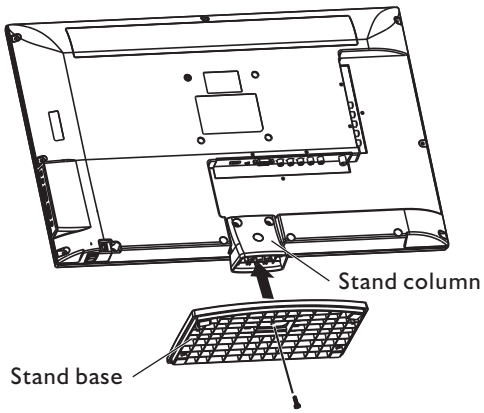
The speaker is not intended to support the weight of your TV. Do not move or handle your TV by the speaker. This can cause damage to your TV that is not covered by the manufacturer's warranty.

Before attempting assembly or removal of the stand, unplug the AC power cord.

To install the stand:

1. Carefully place your TV screen face-down on a cushioned, clean surface to protect the screen from damages and scratches.
2. Align the locators on the stand column with the locating grooves on the back of the TV and secure the stand column to your TV with the three screws provided.
3. Make sure the wide portion of the stand base faces the front of your TV. Align the base with the stand column, then secure the base to the column with the screw provided.





To remove the stand from the TV, perform these steps in reverse order.

NOTE:
The appearance of this product in these illustrations may differ from your actual product, and is for comparative purposes only.

WALL MOUNTING INSTRUCTIONS

Safety Precautions:

1. Be sure to ask an authorized service personnel to carry out setup.
2. Thoroughly read this instruction before setup and follow the steps below precisely.
3. The wall to be mounted should be made from solid materials. Only use accessories supplied by the manufacturer.
4. Very carefully handle the unit during setup. We are not liable for any damage or injury caused by mishandling or improper installation.
5. Be sure to place the unit on a stable and soft platform which is strong enough to support the unit.
6. Do not uplift the speaker when moving the display. The appearance of the unit may different from the actual ones.
7. Design and specifications are subject to change without notice.
8. Retain these instructions for future reference.

Note: All the wall mounting parts are optional and may be unavailable in your model.

Below we will show you how to mount the Display on the wall using our company's wall mounting components.

1

Take out these parts from the box.

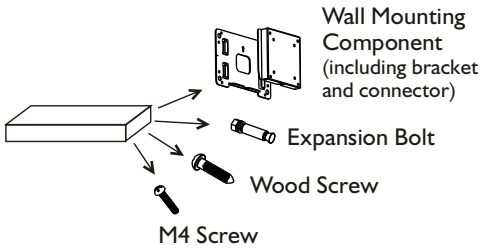


Fig. 1

2

Screw 4pcs expansion bolts to fix the wall mounting bracket on the wall.

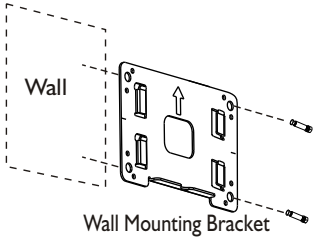


Fig. 2a

If your wall is a wooden structure, please fix the wall mounting bracket on the wall with 8 pcs wood screws.

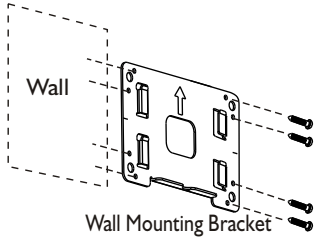


Fig. 2b

3

Use the 4pcs M4 screws to fix the wall mounting connector to the rear of the display unit.

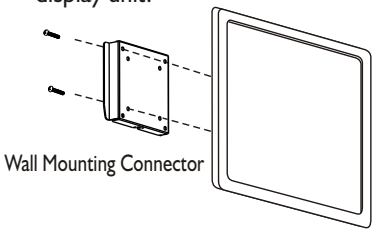


Fig. 3

4

Fully insert the two insertions on the wall mounting connector into the locating grooves on the wall mounting bracket from top to bottom end.

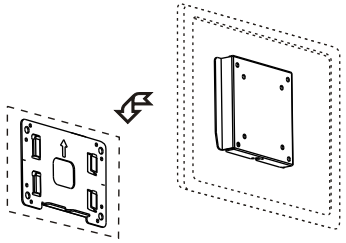


Fig. 4

5

Use screwdriver to revolve the Clasper to the Positioner following the direction of the arrow.

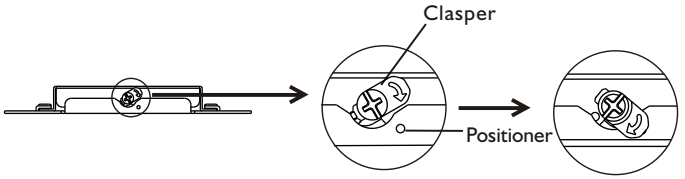


Fig. 5

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SANYO Electric Co., Ltd.